



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

CHEM-180-DX01A
Applied Science for Civil
Winter 2021

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	John Lee
(b) Office hours	Tuesday 1:30 to 3:00 pm, other times by appointment.
(c) Location	F 348D Lansdowne Campus CC118A Interurban Campus
(d) Phone	(250) 370-3436 Alternative: 250 507 1779
(e) E-mail	leejohn@camosun.ca
(f) Website	D2L

2. Intended Learning Outcomes

Upon completion of this course, the student will be able to:

1. Apply the safety procedures applicable to a chemistry laboratory.
2. Apply the basic terminology and tools used in chemistry, including; components of the periodic table, units, the mole concept, balancing of equations, chemical nomenclature and chemical bonding.
3. Use the gas laws to calculate changes in a gas temperature, pressure and volume and apply the concepts of vapour pressure and partial pressure.
4. Describe the processes of dissolution and precipitation and apply equations of solubility; differentiate between a solution and a suspension.
5. Describe common contaminants in natural water supplies and the methods used for measuring them.
6. Define LD50 and describe simple concepts of toxicology.
7. Describe the natural cycles of nitrogen, phosphorus and carbon.
8. Identify various types of bacteria and their metabolism.
9. Describe bacterial growth and the bacterial growth curve.
10. Apply the fundamentals of chemistry to such applications as; corrosion and cathodic protection; hydration of Portland cement; polymers and plastics.

3. Required Materials

(a) Texts

No Textbook is required. All lecture notes, recorded *Blackboard Collaborate* online lectures, and the lab manual will be posted on D2L.

(b) Other Resources that might be helpful

Introductory Chemistry -1st Canadian Edition, David A Ball and Jessie A. Key. Available for free download from: <https://opentextbc.ca/introductorychemistry/>

Chemistry: The Central Science, Brown, LeMay, Bursten. Any later US or Aus edition will be a useful resource if you can find a free/used one.

General Materials and Supplies

Calculator A scientific calculator is *required* please make sure you have it available during the on-line lectures and laboratory sessions, term tests and the final exam.

Laptop or handheld device with access to Internet As all lectures, labs and 'office' help will be in an online format, please make sure you are able to access the internet.

4. Course Content and Schedule

Unit	Topic: Foundations	Unit	Topic: Applications
1	Review of Basic Chemistry Principles	6	The Carbon Cycle
2	Periodic Table and Bonding	7	Bacteria and the Nitrogen Cycle
3	Intermolecular forces	8	Toxicology and Selected Methods of Analysis. Waste Water treatment.
4	Gases	9	Chemistry of Cement & Concrete
5	Solutions & Solubility	10	Polymers & Plastics

Online Lecture	Tuesday, & Thursday:	3:30 pm – 4:20 pm	ONLINE
	Wednesday & Friday:	1:30 pm – 2:20 pm	ONLINE
Online Laboratory*	Monday:	2:30 pm – 4:20 pm	ONLINE

*Laboratory classes will be in the form of a short video or presentation. Please note: there will be no lab activity in weeks 3, 6, 8 and 13. After watching the video you will be required to manipulate data and answer questions. You may do the labs at your own pace (i.e. before or after the specified time) but you must submit the lab assignment on the specified time shown in the lab schedule, unless prior permission or accommodation has been granted. The lab period will be used to help with any lab related material, or any other course content related questions. **will be due on or before the final lab period on April 16th.**

Online Laboratory Schedule Winter 2021

Week Number	Date of lab	Experiment
1	Monday, Jan. 11 th	<i>Safety in the Laboratory: Videos and Quiz. Outline of Lab Requirements.</i>
2	Monday, Jan. 18 th	Expt 1. Stoichiometry of Reactions
3	Monday, Jan. 25 th	NO LAB ACTIVITY THIS WEEK <i>Expt 1. Stoichiometry of Reactions: report due</i>
4	Monday, Feb. 1 st	Expt 2. Magnesium and Hydrochloric Acid
5	Monday, Feb. 8 th	Term Test #1 <i>Expt 2. Magnesium and Hydrochloric Acid : report due</i>
6	Monday, Feb. 15 th	NO LAB ACTIVITY THIS WEEK FAMILY DAY/READING BREAK
7	Monday, Feb. 22 nd	Expt 3. Spectrophotometric Determination of Copper.
8	Monday, Mar. 1 st	NO LAB ACTIVITY THIS WEEK <i>Expt 3. Spectrophotometric Determination of Copper: report due</i>
9	Monday, Mar. 8 th	Term Test #2
10	Monday, Mar. 15 th	Expt 4. Atomic Absorption Spectroscopy.
11	Monday, Mar. 22 nd	Expt 5. Analysis of Hard Water <i>Expt 4. Atomic Absorption Spectroscopy: report due</i>
12	Monday, Mar. 29 th	Term Test #3
13	Monday, Apr. 5 th	NO LAB ACTIVITY THIS WEEK EASTER MONDAY: COLLEGE CLOSED
14	Monday, Apr. 12 st	Review Session. <i>Expt 5. Analysis of Hard Water: report due</i>

5. Basis of Student Assessment (Weighting)

(Should be directly linked to learning outcomes.)

(a) Laboratory Work: **20 %**

To write the final exam you need to achieve a minimum final score of **50%** on laboratory work.

Lab Reports/Pre-lab questions are to be submitted on or before the indicated due date, unless you have prior accommodation through CAL, or have requested an extension. **You must hand in your own report and pre-lab assignment.**

(b) 3 Midterm Tests: **10 % 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.**

(c) A 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 midterms/quizzes and the final.

(d) 10 Online Quizzes: **2 % each**

Short D2L online multiple choice quizzes. You should attempt all the questions in the quiz. The 2% from any missed quizzes will be carried on to the final exam.

6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

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

The Science Help Centre will be available in Blackboard Collaborate virtual form. The hours will be posted on D2L as soon as these have been finalized.

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, Student Ancillary Fees, Academic Integrity, Grade Review & Appeals, Student Misconduct and Academic Accommodations for Students with Disabilities and Student Penalties and Fines.

Plagiarism and cheating are subject to academic penalties according to the School's policy on academic integrity. <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.
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If you wish to lodge a formal appeal against a final grade, you should do so within 10 working days of the grade being posted.

<http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.4.pdf>