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

CHEM-180-X01
Applied Science for Civil
Winter 2020

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.*

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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	PopaT@camosun.bc.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. Lecture notes and lab procedures will be posted on D2L.

(b) Other

General Materials and Supplies

Safety glasses — Safety glasses *are required* when handling hazardous chemicals. Each student is required to provide her or his pair of safety glasses. Students lacking safety glasses when they are required *will not be permitted* to be in the laboratory.

Lab coats — Lab coats are *recommended* for all experimental work in the laboratory. Each student has to provide her or his own lab coat.

Calculator — A scientific calculator is *required* at times in the laboratory, in lecture, and during term tests and the final exam. Each student is *required* to provide her or his own scientific calculator. Cell phone-based, tablet-based or computer-based calculators cannot be used during tests or the final exam.

4. Course Content and Schedule

Lecture Plan

Unit	Topic	Unit	Topic
0	Review – Basic Chemistry Principles	5	Solutions & Solubility Equilibrium
1	Periodic Properties	6	Natural cycles of C and N, bacteria
2	Chemical bonding and molecular geometry	7	Toxicology
3	Intermolecular forces, liquids and solids	8	Electrochemistry
4	Gases	9	Applied Chemistry

Lecture	Tuesday	2:30 pm – 3:20 pm	CHW 351
	Wednesday, Thursday	2:30 pm – 3:20 pm	TEC 110
	Friday	12:30 pm – 1:20 pm	TEC 173
Laboratory	Friday	10:30 am – 12:20 pm	TEC 230

Test I	Thursday	February 14th	(Lab period)	TEC 230
Test II	Thursday	March 13th	(Lab period)	TEC 230

Laboratory schedule Winter 2020

Week Number	Date of lab	Experiment
I	Friday, **Jan 10th**	*Laboratory & Safety Orientation*
II	Friday, **Jan 17th**	***Expt 1.*** Stochiometry: Decomposition of Copper Bromide
III	Friday, **Jan 24th**	*No Lab*
IV	Friday, **Jan 31st**	***Expt 2.*** Hardness of water, titrating combined Calcium and Magnesium in Colquitz River water
V	Friday, **Feb 7th**	*No Lab*
VI	Friday, **Feb 14th**	*Term **Test #1***
VII	Friday, **Feb 21st**	Reading Break
VIII	Friday, **Feb 28th**	***Expt 3.*** The molar Volume of Hydrogen
IX	Friday, **Mar 6th**	*No Lab*
X	Friday, **Mar 13th**	*Term **Test #2***
XI	Friday, **Mar 20th**	*No Lab*
XII	Friday, **Mar 27th**	***Expt 4.*** Spectrophotometric determination of Copper
XIII	Friday, **Apr 3rd**	*No Lab*
XIV	Friday, **Apr 10th**	Good Friday – College closed

5. Basis of Student Assessment (Weighting)

(Should be directly linked to learning outcomes.)

(a) Laboratory Work: **25%**

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

Lab Reports are to be submitted at the beginning of the following lab period. Lab procedures and instructions are provided online (on D2L). Lab partners must hand in their own separate reports and are expected to share equally in experimental work. Lab reports count 90% 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.

(b) 2 Midterm Tests: **20% 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 3 hour written Final Examination covering all the material in the course: **35 %**

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

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

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

"Chemistry, The Central Science" by Brown, LeMay & Bursten, 3rd Australian Edition. The 2nd and 1st Australian editions are also acceptable if you have a used book.

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	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal*: 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.