

# COURSE SYLLABUS



COURSE TITLE: CHEM-180: Applied Science for Civil

CLASS SECTION: X01A/X01B

TERM: 2023W

COURSE CREDITS: 4

DELIVERY METHOD: Face to Face

Camosun College campuses are located on the traditional territories of the Ləkʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

---

*Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.*

## INSTRUCTOR DETAILS

---

NAME: Steve McKinnon

EMAIL: [mckinnons@camosun.ca](mailto:mckinnons@camosun.ca)

OFFICE: CC235

HOURS: Mondays 10:30 - 11:20 and Wednesdays 11:30 - 12:20

*As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.*

## CALENDAR DESCRIPTION

---

This chemistry course emphasizes the chemistry of water, the detection of pollutants and water treatment. Students will study basic concepts in chemistry, gases, solubility, electrolytes, pH, pollutants and methods of detection, natural cycles of nitrogen, phosphorus and carbon as well as the role of bacteria. Applications to civil engineering are included throughout the course.

### PREREQUISITE(S):

One of:

- C+ in Pre-calculus 12
- C+ in MATH 097
- C in MATH 107
- C in MATH 115

And one of:

- C in Chemistry 11
- C in Camosun Alternative
- C in CHEM 175

## COURSE LEARNING OUTCOMES / OBJECTIVES

---

Upon completion of this course a 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.

## REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

---

CHEM 180 Laboratory Manual Fall 2022

CHEM 180 Question Booklet

Safety Glasses

Scientific Calculator

## COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

---

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor. Please note that this timeline is intended to be a rough guide based on teaching the course in an online format. The exact content may not match up exactly with the week shown in a face-to-face format.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
1	Ch 1) Review of key concepts. Exp 1) Water of Hydration Section A	D2L Lab review and quiz prior to lab
2	Ch 1) Review of key concepts. Exp 1) Water of Hydration Section B	D2L Lab review and quiz prior to lab
3	Ch 1) Review of Key Concepts Ch 2) Naming and Formulas. Exp 2) The Magnesium and HCl Reaction Section A	
4	Ch 3) Periodic Trends and Chemical Bonding. Exp 2) The Magnesium and HCl Reaction Section B	
5	Ch 4) Gases and the Gas Laws	Term Test 1

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
6	Ch 4) Gases and the Gas Laws / Ch 5) Intermolecular Forces. Exp 3) The Spectrophotometric Determination of Copper Section A	
7	Reading Break	College Closed
8	Ch 5) Intermolecular Forces / Ch 6) Solutions and Solubility. Exp 3) The Spectrophotometric Determination of Copper Section B	
9	Ch 6) Solutions and Solubility. Exp 4) Solubility Equilibrium Section A	Term Test 2
10	Ch 6) Solutions and Solubility. Exp 4) Solubility Equilibrium Section B	
11	Ch 6) Solutions and Solubility / Ch 7) Wastewater Exp 5) Quantification of Water Hardness Section A	
12	Ch 7) Wastewater / Ch 8) Carbon and the Carbon Cycle Exp 5) Quantification of Water Hardness Section B	Term Test 3
13	Ch 8) Carbon and the Carbon Cycle	No class – Good Friday
14	Ch 9) Bacteria and the Nitrogen Cycle	

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

## EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Laboratory Work	20%
Term Test 1	15%
Term Test 2	15%
Term Test 3	15%
FINAL EXAM	35%
<b>TOTAL</b>	<b>100%</b>

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information. <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

## COURSE GUIDELINES & EXPECTATIONS

---

- There is an expectation that students complete all five laboratory experiments and complete the associated assignments with a minimum score of 50%. If you are to miss a laboratory session, you must contact the instructor prior to the laboratory section. With permission you may complete the experiment virtually using the videos and data provided for partial credit.
- Post-Lab assignments should be submitted on or before your next laboratory class, unless you have prior accommodation through CAL, or have requested an extension. You must hand in your own assignment and pre-lab, regardless of whether you have worked with a partner with the same data.
- In the event of a term test being missed due to illness/other commitments the weight of the missed test will be carried over to the final.
- If it is advantageous to the student the theory mark will be solely derived from the final examination, or a combination of midterms and the final. Students who have completed all three term tests have the option to be graded out in lieu of taking the final exam, if they wish.

## SCHOOL OR DEPARTMENTAL INFORMATION

---

The School of Arts and Science offers a Science Help Centre. Tutors are available in Fisher 264 everyday to assist you in chemistry, biology and physics. The service begins in week three, and the schedule will be posted on D2L for you at this time.

Students may only use recording devices in the classroom with the prior permission of the instructor or the Centre for Accessible Learning. The instructor's permission is not required when the use of a recording device is sanctioned by the College's Centre for Accessible Learning to accommodate a student's disability, *and* when the instructor has been provided with an instructor notification letter which specifies the use of a recording device.

Camosun College is a scent-free institution. Please refrain from wearing scents. Thank you.

## STUDENT RESPONSIBILITY

---

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

## SUPPORTS AND SERVICES FOR STUDENTS

---

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

---

Academic Advising

<http://camosun.ca/advising>

---

Accessible Learning

<http://camosun.ca/accessible-learning>

---

Counselling

<http://camosun.ca/counselling>

---

Career Services	<a href="http://camosun.ca/coop">http://camosun.ca/coop</a>
Financial Aid and Awards	<a href="http://camosun.ca/financialaid">http://camosun.ca/financialaid</a>
Help Centres (Math/English/Science)	<a href="http://camosun.ca/help-centres">http://camosun.ca/help-centres</a>
Indigenous Student Support	<a href="http://camosun.ca/indigenous">http://camosun.ca/indigenous</a>
International Student Support	<a href="http://camosun.ca/international/">http://camosun.ca/international/</a>
Learning Skills	<a href="http://camosun.ca/learningskills">http://camosun.ca/learningskills</a>
Library	<a href="http://camosun.ca/services/library/">http://camosun.ca/services/library/</a>
Office of Student Support	<a href="http://camosun.ca/oss">http://camosun.ca/oss</a>
Ombudsperson	<a href="http://camosun.ca/ombuds">http://camosun.ca/ombuds</a>
Registration	<a href="http://camosun.ca/registration">http://camosun.ca/registration</a>
Technology Support	<a href="http://camosun.ca/its">http://camosun.ca/its</a>
Writing Centre	<a href="http://camosun.ca/writing-centre">http://camosun.ca/writing-centre</a>

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

---

## COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

---

### Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

### Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

### Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

### Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

### Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the “Attendance” section under “Registration Policies and Procedures” (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

### Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

### Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun’s Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student’s right to choose what is right for them. For more information see Camosun’s Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and [camosun.ca/sexual-violence](http://camosun.ca/sexual-violence). To contact the Office of Student Support: [oss@camosun.ca](mailto:oss@camosun.ca) or by phone: 250-370-3046 or 250-3703841

### Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College’s Student Misconduct Policy at

<http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

**Changes to this syllabus:** Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.