

# COURSE SYLLABUS



COURSE TITLE: CHEM-180: Applied Science for Civil

CLASS SECTION: X01

TERM: 2025W

COURSE CREDITS: 3

DELIVERY METHOD: Face to Face

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

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

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## INSTRUCTOR DETAILS

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NAME: Steve McKinnon

EMAIL: mckinnons@camosun.ca

OFFICE: CC235

HOURS: Mondays 11:30 - 12:20 and Wednesdays 2:30 - 3:20

*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

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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

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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

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CHEM 180 Laboratory Manual Fall 2025

CHEM 180 Question Booklet

Safety Glasses

Scientific Calculator

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

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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. Lab Orientation	D2L Lab quiz
2	Ch 1) Review of key concepts.	
3	Ch 1) Review of Key Concepts Ch 2) Naming and Formulas. Lab 1: Water of Hydration	
4	Ch 3) Periodic Trends and Chemical Bonding.	Term Test 1
5	Ch 4) Gases and the Gas Laws Lab 2: The Magnesium and HCl Reaction	

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
6	Ch 4) Gases and the Gas Laws / Ch 5) Intermolecular Forces.	
7	Reading Break	College Closed
8	Ch 5) Intermolecular Forces / Ch 6) Solutions and Solubility.	Term Test 2
9	Ch 6) Solutions and Solubility. Lab 3: The Spectrophotometric Determination of Copper	
10	Ch 6) Solutions and Solubility.	
11	Ch 6) Solutions and Solubility / Ch 7) Wastewater Lab 4: Solubility Equilibrium	
12	Ch 7) Wastewater / Ch 8) Carbon and the Carbon Cycle	Term Test 3
13	Ch 8) Carbon and the Carbon Cycle Lab 5: Quantification of Water Hardness	
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

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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 [camosun.ca/services](https://camosun.ca/services).

Support Service	Website
Academic Advising	<a href="https://camosun.ca/services/academic-supports/academic-advising">camosun.ca/services/academic-supports/academic-advising</a>
Accessible Learning	<a href="https://camosun.ca/services/academic-supports/accessible-learning">camosun.ca/services/academic-supports/accessible-learning</a>
Counselling	<a href="https://camosun.ca/services/health-and-wellness/counselling-centre">camosun.ca/services/health-and-wellness/counselling-centre</a>
Career Services	<a href="https://camosun.ca/services/co-operative-education-and-career-services">camosun.ca/services/co-operative-education-and-career-services</a>
Financial Aid and Awards	<a href="https://camosun.ca/registration-records/financial-aid-awards">camosun.ca/registration-records/financial-aid-awards</a>

Support Service	Website
Help Centres (Math/English/Science)	<a href="https://camosun.ca/services/academic-supports/help-centres">camosun.ca/services/academic-supports/help-centres</a>
Indigenous Student Support	<a href="https://camosun.ca/programs-courses/iecc/indigenous-student-services">camosun.ca/programs-courses/iecc/indigenous-student-services</a>
International Student Support	<a href="https://camosun.ca/international">camosun.ca/international</a>
Learning Skills	<a href="https://camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills">camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills</a>
Library	<a href="https://camosun.ca/services/library">camosun.ca/services/library</a>
Office of Student Support	<a href="https://camosun.ca/services/office-student-support">camosun.ca/services/office-student-support</a>
Ombudsperson	<a href="https://camosun.ca/services/ombudsperson">camosun.ca/services/ombudsperson</a>
Registration	<a href="https://camosun.ca/registration-records/registration">camosun.ca/registration-records/registration</a>
Technology Support	<a href="https://camosun.ca/services/its">camosun.ca/services/its</a>
Writing Centre	<a href="https://camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills">camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills</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 Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: <https://camosun.libguides.com/academicintegrity/welcome>  
Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf> for Camosun's Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

##### Academic Accommodations for Students with Disabilities

Camosun College is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging appropriate academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a documented disability and think you may need accommodations, you are strongly encouraged to contact the Centre for Accessible Learning (CAL) and register as early as possible. Please visit the CAL website for more information about the process of registering with CAL, including important deadlines: <https://camosun.ca/cal>

##### Academic Progress

Please visit <https://camosun.ca/sites/default/files/2023-02/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 <https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <https://camosun.ca/registration-records/tuition-fees#deadlines>.

### Grading Policy

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### 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 (see [Medical/Compassionate Withdrawals policy](#)). Please visit <https://camosun.ca/services/forms#medical> to learn more about the process involved in a medical/compassionate withdrawal.

### Sexual Violence

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 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 Policy:

<https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf> and [camosun.ca/services/sexual-violence-support-and-education](https://camosun.ca/services/sexual-violence-support-and-education).

To contact the Office of Student Support: [oss@camosun.ca](mailto:oss@camosun.ca) or by phone: 250-370-3046 or 250-370-3841

### 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 <https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

### Looking for other policies?

The full suite of College policies and directives can be found here: <https://camosun.ca/about/camosun-college-policies-and-directives>

**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.