

COURSE SYLLABUS



COURSE TITLE: CHEM-180: Applied Science for Civil

CLASS SECTION: X01A/X01B

TERM: 2023F

COURSE CREDITS: 4

DELIVERY METHOD(S): 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](#).

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: John Lee

EMAIL: leejohn@camosun.ca

OFFICE LOCATION: CC 235

HOURS: Mondays 3:30 to 4:30 or by appointment

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

CO-REQUISITE(S):

EXCLUSION(S):

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 2023

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 previous terms. The exact class content may not match up exactly with the week shown. Students are required to bring the CHEM 180 Question Booklet to each class.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
1	CHAPTER 1: Review of Key Concepts. Experiment 1: Water of Hydration, for GROUP A ONLY	Group A must have reviewed the safety information prior to attending the first experiment
2	CHAPTER 1: Review of Key Concepts. Experiment 1: Water of Hydration, for GROUP B ONLY	Group B must have reviewed the safety information prior to attending the first experiment
3	CHAPTER 1: Review of Key Concepts / CHAPTER 2: Naming and Formulas. Experiment 2: The Magnesium and Hydrochloric Acid Reaction for GROUP A ONLY	
4	CHAPTER 3: Periodic Trends and Chemical Bonding. Experiment 2: The Magnesium and Hydrochloric Acid Reaction for GROUP B ONLY .	
5	CHAPTER 4: Gases and the Gas Laws. TERM TEST 1 Thursday October 5 th during Lab Period	No class Monday Oct 2 nd : Camosun observes Truth and Reconciliation Day
6	CHAPTER 4: Gases and the Gas Laws / CHAPTER 5: Intermolecular Forces. Experiment 3: The Spectrophotometric Determination of Copper for GROUP A ONLY	No class Monday Oct. 9 th : Camosun observes Thanksgiving Day
7	CHAPTER 5: Intermolecular Forces / CHAPTER 6: Solutions and Solubility Experiment 3: The Spectrophotometric Determination of Copper for GROUP B ONLY	
8	CHAPTER 6: Solutions and Solubility. Experiment 4: Solubility Equilibrium for GROUP A ONLY	
9	CHAPTER 6: Solutions and Solubility. Experiment 4: Solubility Equilibrium for GROUP B ONLY	
10	CHAPTER 6: Solutions and Solubility / CHAPTER 7: Wastewater. TERM TEST 2 Thursday Nov. 6 th during Lab Period	
11	CHAPTER 7: Wastewater / CHAPTER 8: Carbon and the Carbon Cycle Experiment 5: Quantification of Water Hardness for GROUP A ONLY.	No class Monday Nov. 13 th : Camosun observes Remembrance Day
12	CHAPTER 8: Carbon and the Carbon Cycle: Experiment 5: Quantification of Water Hardness for GROUP B ONLY.	
13	CHAPTER 9: Bacteria and the Nitrogen Cycle TERM TEST 3 Thursday Nov. 30 th during Lab Period	
14	Review. Experiment 6: Primary Wastewater Treatment. Optional make-up experiment for both groups. Re-test days	

Students registered with the Centre for Accessible Learning (CAL) who complete 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 Experiment 1	4 %
Laboratory Experiment 2	4 %
Laboratory Experiment 3	4 %
Laboratory Experiment 4	4 %
Laboratory Experiment 5	4 %
Laboratory Experiment 6	*4%
Term Test 1	15%
Term Test 2	15%
Term Test 3	15%
FINAL EXAM	35%
TOTAL	100%

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>

*Experiment 6 is an optional experiment that can be used to replace a lower experiment score, or make up for a missed experiment.

COURSE GUIDELINES & EXPECTATIONS

There is an expectation that students complete FIVE laboratory experiments, along with the associated assignments. In the event that you miss a laboratory session, your options include; completing the experiment with the following group (Only Group A students have this option), perform the experiment 6 make-up experiment in Week 14, or request data in order to complete the assignment.

Post-Lab assignments will be submitted on, or before your next laboratory class, unless you have prior accommodation through CAL, or have requested an extension due to extenuating circumstances. **You must hand in your own assignment and pre-Lab assignment, regardless of whether you have worked with a partner and obtained the same data.**

In the event of a term test being missed due to illness/ extenuating circumstances the weight of the missed test will be carried over to the final, unless you are able to arrange an alternate time with your instructor, or the Assessment Centre. <https://camosun.ca/apply/how-apply/assessment-and-testing/rescheduled-camosun-course-exams>

Students must write each test during the time scheduled in the course outline, and submit required assignments by the specified deadline. On a case-by-case basis, and at the instructor's discretion, a student experiencing a personal emergency or an uncontrollable extenuating circumstance (as outlined in the Academic Concessions Policy) may be offered a concession for missed tests/quizzes/reports, if possible and appropriate.

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 with a minimum of a 73 % (B) average have the option to be graded out with their existing grade in lieu of taking the final exam if they so wish.

SCHOOL OR DEPARTMENTAL INFORMATION

The School of Arts and Science offers a Science Help Centre at Lansdowne campus. 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 in order 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	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid

Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

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.

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. To contact the Office of Student Support: 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.