COURSE SYLLABUS

COURSE TITLE: CHEM-070: College Prep Chemistry

CLASS SECTION: 001

TERM: Winter 2025

COURSE CREDITS: 3

DELIVERY METHOD(S): On-campus

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.

For COVID-19 information please visit https://legacy.camosun.ca/covid19/index.html.

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: Silvija Shewaga

EMAIL: shewagas@camosun.ca

OFFICE: P233

HOURS: To be posted on D2L

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

Students will obtain the pre-requisite Chemistry knowledge that will provide a basis for further academic and career/vocational education and training. On completion of the course, students will have an appreciation for chemistry in everyday life and the role it has on the environment, society and human health. They will be able to apply the scientific method of investigation, communicate effectively in the language of chemistry, and collect and manipulate scientific data and handle chemicals in a safe and effective manner.

PREREQUISITE(S):

One of:

- C in Math 10
- B in MATH 039
- C in MATH 053
- C in MATH 057

CO-REQUISITE(S):

Not Applicable

EXCLUSION(S):

Not Applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

CHEM 070 encompasses the Core Topics for Chemistry: Advanced Level (11) outlined in the 2018-2019 BC ABE Articulation Handbook.

Upon successful completion of this course a student will be able to:
• Obtain the prerequisite body of knowledge and skills that will provide a basis for further academic and career / vocational education and training
• Demonstrate an awareness of chemistry in everyday life
• Demonstrate an awareness of chemistry in solutions to environmental challenges
• Apply scientific method to investigate phenomena
• Communicate effectively using the language of chemistry
• Carry out all duties in an ethical, professional manner, including the collection and treatment of data
• Work independently and also as part of a team, where appropriate
• Handle equipment and chemicals in a safe and effective manner with regard to personal safety and the safety of others

Core Topics:
A. Measurement
• Demonstrate the concepts of precision and accuracy and how they differ, utilizing significant figures
• Perform calculations using scientific notation
• Perform conversions with the SI system

B. Properties of Substances
• Differentiate between the phases of matter
• Identify chemical or physical properties of substances
• Describe Dalton's Atomic Theory and the Law of Constant Composition

C. Periodic Trends
• Use the periodic table to determine atomic composition of isotopes
• Use the periodic table to predict electron arrangement of chemical families in order to predict trends in ion charge, reactivity, ionization energy, electronegativity, atomic radii, and ionic radii

D. Atomic Structure
• Analyze the historical development of atomic theory
• Describe the Bohr and Wave Mechanical model of the atom and cite evidence for these models including absorption and emission spectra and their use in modern technology

E. Mole Concept
• Define a mole and its significance
• Perform calculations including molar and formula mass, mole to mass conversions, and percent composition by mass of compounds

F. Bonding
• Define covalent and ionic bonding
• Construct the formulas of compounds

• Use electronegativity to predict bond types
• Draw Lewis structures, predict molecular shapes, and determine polarity

G. Nomenclature
• Write names for compounds given the formulae and write formulae for compounds given the names for the following types of compounds: Covalent compounds, ionic compounds, compounds containing polyatomic ions, compounds containing transition metals and acids

H. Chemical Reactions
• Balance equations
• Classify and predict single and double replacement reactions, combustion reactions, and acid- base neutralizations
• Classify synthesis, decomposition, exothermic and endothermic reactions
• Perform stoichiometric calculations including mass-to-mass, limiting reagent, and percent yield

I. Solutions
• Predict solubility and conductivity of polar and non-polar compounds
• Define Arrhenius acids and bases
• Relate the pH scale to acids and bases
• Perform calculations involving dilutions
• Perform stoichiometric calculations involving solutions including titrations

J. Organic Chemistry
• Classify substances as organic
• Differentiate the various types of bonding between carbon atoms
• Write names and draw structures of hydrocarbons
• Categorize organic compounds based on their functional groups

K. Gases
• Account for the general characteristics of the gas, liquid, and solid states
• Perform gas law calculations

In the laboratory exercises, students will:
• List the safety and protective equipment available in a laboratory setting
• Demonstrate the appropriate procedures and techniques for dealing with particular hazards and hazardous materials
• Follow instructions and procedures
• Handle appropriate equipment for measuring mass, volume, and temperature
• Prepare solutions
• Perform titrations
• Collect and record data effectively
• Analyze and interpret data
• Communicate results and conclusions

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Required materials: Scientific calculator, CHEM070 Lab Manual

Recommended materials: CHEM070 Lecture Notes (from D2L or bookstore)

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.

Date (Tuesdays)	Activity	Due Date
Jan. 7	Experiment 1 – Accuracy and Precision	Next class
Jan. 14	Experiment 2 – Density	Next class
Jan. 21	Experiment 3 – Heat of Combustion	Next class
Jan. 28	Experiment 4 – Geometry of Molecules	End of class
Feb. 4	No Lab	N/A
Feb. 11	Experiment 5 – Saponification Experiment 6 – Recycling Copper (Part 1)	End of class N/A
Feb. 18	No Lab - Reading Week	N/A
Feb. 25	No Lab	N/A
Mar. 4	Experiment 6 – Recycling Copper (Parts 2-6)	Next class
Mar. 11	Experiment 7 – The Iron and Copper Sulfate Reaction	March 18
Mar. 18	No Lab	N/A
Mar. 25	Experiment 8 – Volume of a Gas	Next class
Apr. 1	Experiment 9 – The Magnesium and Hydrochloric Acid Reaction	Next class
Apr. 8	Experiment 10 – Neutralization	End of class

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 noticed is required. Deadlines can be reviewed on the CAL exams page. http://camosun.ca/services/accessible-learning/exams.html

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Unit #	Lecture Dates	Practice Test & Q&A	D2L Quiz Due Date	Test Date
1	Jan 6, 8	Jan 15	Jan 19	Jan 20
2	Jan 13			
3	Jan 22	Jan 29	Feb 2	Feb 3
4	Jan 27			
5	Feb 5	Feb 24	Feb25	Feb 26
6	Feb 10, 12			
7	Mar 3	Mar 17	Mar 18	Mar 19
8	Mar 5, 10, 12			
9	Mar 24, 26	Apr 7	Apr 8	Apr 9
10	Mar 31, Apr 2			

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Laboratory Component (10 x 2% each)	20 %
D2L Quizzes (10 x 2 % each)	20 %
Tests (5 x 12 % each)	60 %
Final Exam (see below)	
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 policy for more information. http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf

The Final Exam will consist of a second chance to perform any of the 5 tests from the course. This means, depending on your grade on your original tests, you can choose to "redo" any of the tests, or you can choose to opt-out entirely and take the grade you got on the original test. Note: the tests will be different versions, but will cover the same material. The grade of each retest will be compared to the original test, and whichever is higher will be the final grade. Therefore, if the retest is not an improvement on the original test mark, the original test mark will remain the same.

COURSE GUIDELINES & EXPECTATIONS

Students must watch the introductory Laboratory Safety video before the first laboratory class.
Safety glasses must be always worn in the laboratory. Students who refuse to wear the required safety equipment will not be allowed to participate in the laboratory.

A student must pass the lecture and laboratory portions separately to be eligible to pass the course.
If it is advantageous to the student, any test mark, which is inferior to the final exam mark, will be replaced by an equal weighting from the final exam. A student must participate in 80% of the laboratory experiments, to be eligible to pass the laboratory component of the course. Any missed laboratory experiments will receive a mark of zero. The lowest 2 laboratory marks will be dropped.

No late quizzes and laboratory reports will be accepted, unless prior permission has been granted by the CAL or the instructor. All quizzes, tests, and laboratory reports are weighted equally.

Laboratory reports are due at the beginning of the laboratory class. No late submissions will be accepted unless the instructor has granted permission prior to the laboratory class. If a student is unable to submit the report on time in person, it is due electronically via email by the start of the laboratory class.

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.

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. 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.