

COURSE SYLLABUS



COURSE TITLE: CHEM-070: College Prep Chemistry

CLASS SECTION: 003

TERM: Winter 2022

COURSE CREDITS: 4

DELIVERY METHOD(S): in-person lectures & labs

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: Diana Li

EMAIL: lid@camosun.bc.ca

OFFICE: Fisher 344C

HOURS: Mon 15:30-16:20, Tue-Thu 14:30-15:20; virtual office hour 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

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

Text	<p>Required:</p> <ul style="list-style-type: none"> ◆ Chem 070 Course Notes / Problem Sets, Department of Chemistry & Geoscience, Camosun College—available from Bookstore.
Other	<ul style="list-style-type: none"> ◆ Chem 070 Lab Manual, Department of Chemistry & Geoscience, Camosun College—available from Bookstore. (Eye protection is mandatory & lab coat is highly recommended!) ◆ Scientific calculator. [If you are taking math courses at Camosun, you need to buy certain Sharp model (scientific calculator with statistic functions). Please check with our Math Department or Bookstore.] ◆ Technological Requirements: http://camosun.ca/services/orientation/online-learning.html

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.

WEEK or DATE RANGE	ACTIVITY or TOPIC (approx. # of lecture hours) Lecture materials will be available on D2L on or before Monday of each week.
I	<i>General Course Info (1) & Ch. 1: Measurements & Calculations (3)</i>
II	<i>Ch. 1 (2) & Ch. 2: Introductory Terminology (2)</i>
III	<i>Ch. 2 (1) & Ch. 3: Chemical Formulas & Names (3)</i>
IV	<i>Ch. 4: Calculations Based Upon Formulas (4)</i>
V	<i>Test I Review (2) & Ch. 5: Stoichiometry (2)</i> *Test I (Ch. 1-3) on Fri, February 11, 10:30-12:20 in F354.
VI	<i>Return & go over Test I (1)</i> <i>Ch. 5: Stoichiometry (3)</i>
VII	<i>Family Day (Monday, February 21) & Reading Break</i>
VIII	<i>Ch. 6: Periodic Table & Electron Distributions (4)</i>
IX	<i>Ch. 7: Chemical Bonding (4)</i>
X	<i>Test II Review (2) & Ch. 8: Gases (2)</i> *Test II (Ch. 4-6) on Fri, March 18, 10:30-12:20 in F354.
XI	<i>Return & go over Test II (1)</i> <i>Ch. 8 (3)</i>
XII	<i>Ch. 9: Liquids & Solutions (4)</i>
XIII	<i>Ch. 9 (1) & Ch. 10: Organic Chemistry (3)</i>

WEEK or DATE RANGE	ACTIVITY or TOPIC (approx. # of lecture hours) Lecture materials will be available on D2L on or before Monday of each week.
XIV	<i>Ch. 10 (1) & Final Exam Info & Review (3)</i>
Tuesday, April 19	Winter 2022 Exam Period begins

***Student must write each test as scheduled for his/her section. No one will be allowed to write late and there will be no makeup test, no exceptions!**

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 scan 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
Labs (up to 10 experiments)	20%
Test I (Chapters 1-3; Week V Lab period on February 11)	20%
Test II (Chapters 4-6; Week X Lab period on March 18))	20%
Final Exam (comprehensive)	40%
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>

* Test dates to be confirmed during the first week of classes in January.

Notes:

1. Student must pass the lab portion of the course to obtain credit for Chem 070 (i.e. you fail the course when you fail the lab component). Your lab faculty will go over the lab component of Chem 070 and lab evaluation with you...
2. Students are required to regularly check D2L and their emails (the email address associated with his/her myCamosun profile must be up to date).
3. Student is encouraged to attempt both tests. Test score (including no score) that is not as high as that of the April final exam will be dropped automatically and its weight redistributed to the final exam. However, anyone who is caught cheating will receive zero for that test which will not be redistributed. For anyone who misses both tests, your final exam will then be 80% of the course grade!
4. **Student must write each test during the lab period as scheduled for his/her section. No one will be allowed to write late and there will be no makeup test, no exceptions.**

COURSE GUIDELINES & EXPECTATIONS

School of Arts & Science Academic Honesty Guidelines: <http://camosun.ca/learn/school/arts-science/images/Arts%20and%20Science%20Academic%20Honesty%20Guidelines.pdf>

Camosun Grading Systems:
<http://camosun.ca/registration-records/student-records/camosun-grading-systems>

SCHOOL OR DEPARTMENTAL INFORMATION

Science Help Centres (SHC):
<https://camosun.ca/services/academic-supports/help-centres/science-help-centres>

Student Learning Success Guides: All Guides
https://camosun.libguides.com/CSSCHome/Images_HOME?preview=8c8156761f510434e998e6240e396088

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.