

COURSE SYLLABUS



COURSE TITLE: CHEM-070: College Prep Chemistry

CLASS SECTION: 003

TERM: Fall 2022

COURSE CREDITS: 4

DELIVERY METHOD(S): In-person Lecture and Labs

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](#).

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: Dr. Tatiana Popa

EMAIL: PopaT@camosun.ca

OFFICE: F350B

HOURS: Monday 1:30-2:30 pm and 4:00-5:00 pm 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

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

CHEM 070 Course Pack and **Laboratory Manual**, purchased from the Camosun Bookstore.

Safety glasses from the Bookstore, or any hardware store.

Scientific calculator. The Bookstore (SHARP EL-531) is the recommended model if you do not already have one.

A **lab coat** is recommended.

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

Lecture	Monday	6:00 pm - 8:50 pm	F306
	Wednesday	6:00 pm - 6:50 pm	F306
Lab	Wednesday	7:00 pm - 8:50 pm	F300

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	OTHER NOTES
1 - 2	Measurements and Calculations	
3 - 4	Introductory Terminology	
4 - 5	Chemical Formulas and Names	
5 - 6	Calculations based on Formulas	
7 - 8	Stoichiometry	
9	Periodic Table and Electron Distributions	
10	Electron Distributions and Chemical Bonding	
11	Chemical Bonding	
11 - 12	Gases	
12 -13	Liquids and Solutions	
13 -14	Organic Chemistry	

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>

Lab Schedule F2022 (This Schedule is Subject to Change)

	Date of Lab 7:00 – 8:50 pm)	Activity
Week I	Wednesday, Sep 7 th	Safety in the Laboratory: Videos and Quiz. Outline of Lab requirements
Week II	Wednesday, Sep 14 th	Expt. 1 - Density <i>Lab Safety Quiz due</i>
Week III	Wednesday, Sep 21 st	Experiment 15 - Accuracy and Precision <i>Expt. 1 – Density: report due</i>
Week VI	Wednesday, Sep 28 th	Expt. 4 - Heat of Combustion <i>Experiment 15 - Accuracy and Precision: report due</i>
Week V	Wednesday, Oct 5 th	Expt. 3 - Separating Mixtures <i>Expt. 4 - Heat of Combustion: report due</i>
Week VI	Wednesday, Oct 12 th	TERM TEST I
Week VII	Wednesday, Oct 19 th	Expt. 5 - Recycling Copper <i>Expt. 3 - Separating Mixtures: report due</i>
Week VIII	Wednesday, Oct 26 th	Expt. 5 - Recycling Copper and Lab Discussion <i>Expt. 5 - Recycling Copper: report due</i>
Week IX	Wednesday, Nov 2 nd	Expt. 7- The Copper and Silver Nitrate Reaction
Week X	Wednesday, Nov 9 th	TERM TEST II
Week XI	Wednesday, Nov 16 th	Molecular Models, Geometry and Polarity <i>Expt. 7 – The Copper and Nitrate Reaction: report due</i>
Week XII	Wednesday, Nov 23 rd	Expt. 10 - Volume of a Gas
Week XIII	Wednesday, Nov 30 th	Expt. 12 - Neutralization <i>Expt. 10 - Volume of a Gas: report due</i> <i>Expt. 12 - Neutralization: report due</i>
Week XIV	Wednesday, Dec 7 th	Lab wrap-up... Final Review

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Laboratory component	25%
2 Term Tests: 20 % each	40%
A 3-hour written final examination covering all the material in the course	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>

COURSE GUIDELINES & EXPECTATIONS

a) To write the final exam you must achieve a **minimum final score of 50% on laboratory work**, and **you must pass both** the lecture portion and the laboratory portion in order to pass the course. Lab reports should be submitted on or before the indicated date, usually the next laboratory class. You must hand in your own lab report, regardless of whether you have worked with a partner and obtained the same data. Plagiarized work is subject to academic penalties –see “Academic Integrity” below.

b) 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. **There are no make-up dates for term tests, no exceptions.**

c) If it is advantageous to the student the theory mark will solely be derived from the final examination, or a combination of term test(s) and final.

SCHOOL OR DEPARTMENTAL INFORMATION

The School of Arts and Science offers a Science Help Centre. Tutors are available to assist you in chemistry, biology and physics. The service begins in week two, and the schedule will be posted on D2L.

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](http://camosun.ca/services/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.