

COURSE SYLLABUS



COURSE TITLE: CHEM-120: College Chemistry 1

CLASS SECTION:

TERM: Winter 2023

COURSE CREDITS: 3

DELIVERY METHOD(S): In-person Lecture and 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](#).

<HOLD FOR 2021F COVID-19 LANGUAGE>

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 Sanz (Lecture)	Dr. Larry Lee (Lab)
EMAIL:	TatianaS@camosun.ca	LeeL@camosun.ca
OFFICE:	F350B	
HOURS:	Tuesday 5:00 - 5:50 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

For both university and technology students, this course starts with atomic structure and periodic properties and leads to a discussion of chemical bonding, thermochemistry, molecular structure, intermolecular structure, colligative properties, intermolecular forces of attraction and their role in environmental issues. The experiments include chemical synthesis and analysis by titration and spectroscopy.

PREREQUISITE(S):

One of:

- C in Chemistry 12
- C in Camosun Alternative

CO-REQUISITE(S):

EXCLUSION(S):

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon completion of this course a student will be able to:

1. Utilize nomenclature rules to name ionic and covalent compounds.
2. Demonstrate an understanding of stoichiometry by balancing chemical equations and performing mathematical calculations involving chemical reactions.
3. Describe the electronic structure of any atom in the periodic table and apply it to explain many of the physical and chemical properties of the elements.
4. Utilize simple bonding theories to explain why elements combine to form the compounds they do and also to explain many of the properties of compounds.
5. Apply knowledge of intermolecular interactions to rationalize many important physical properties of bulk matter in the gas, liquid and solid phases.
6. Use standard chemistry lab equipment, including burets, pipets, Buchner filters, and volumetric glassware in the correct manner.
7. Perform many standard laboratory procedures, such as titrations, preparation of standard solutions, the preparation, isolation, and purification of compounds, as well as use spectrophotometers to make analytical measurements.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

(a) **My Lab and Mastering Course Code.** A My Lab and Mastering Access Code can be purchased from the Camosun Bookstore. https://www.camosuncollegebookstore.ca/buy_access_codes.asp
Your Course code is valid for multiple courses for 2 years from purchase. So, if you already have a code (from Chemistry 110) there is no need to get another. If you have previously purchased a new textbook (Custom Camosun Edition) or ebook, then this includes a My Lab Mastering Chemistry Course Code.

(b) **Chemistry 120 Laboratory Manual**

Other Recommended Materials for the Course

Chemistry, The Central Science, Brown, le May, Bursten. *Custom Camosun Edition*. The 2nd and 1st Australian editions of this textbook are also acceptable. **Note: New textbooks come with a My Lab Mastering Chemistry Code.**

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

Lecture Tuesday 6:00 pm – 8:50 pm F306

Lab Thursday 6:00 pm – 8:50 pm F356

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

WEEK	ACTIVITY or TOPIC	Material covered	Textbook Chapters
1-2	Intro and Review	Classification of matter, units of measurement, significant figures, atoms, protons, neutrons, electrons, isotopes, atomic masses. Compounds, nomenclature, the mole, molar mass and percent composition by mass, chemical equations, reaction stoichiometry, solution concentration.	1, 2, 3, 4
2-4	Electronic Structure of Atoms	Light, quanta and photons, atomic spectra and energy levels, wave properties of electrons. Atomic orbitals, quantum numbers, electron spin, electronic structure of the hydrogen atom. Many-electron atoms, electron configurations of atoms and ions.	6
5-6	Periodic Properties	Development of the periodic table, effective nuclear charge, atomic and ionic radius, ionisation energy, electron affinity. Term Test I, Thursday, Feb 16, 6:00-8:00 (lab time)	7
7-8	Chemical Bonding	Ionic bonds, Lewis symbols, lattice energy, properties of ionic compounds. Covalent bonds, octet rule and Lewis structures. Polyatomic species, resonance and formal charge. Exceptions to the octet rule. Electronegativity and bond polarity. Bond enthalpies.	8
9-10	Molecular Geometry	Molecules: shape, size, and bond strength. Shapes of molecules and ions, VSEPR theory. Charge distribution in molecules, polar bonds and polar molecules. Bond strengths and bond lengths. Orbitals, hybridization and bonding. Molecular Orbitals (hydrogen atom) and Metallic Bonding.	9

WEEK	ACTIVITY or TOPIC	Material covered	Textbook Chapters
10-11	Intermolecular Forces, Liquids and Solids	Comparison of liquids and solids, intermolecular forces, ion-dipole, dipole-dipole, London dispersion forces, hydrogen bonding. Properties of liquids, phase changes, heating curves, critical temperature and pressure, vapour pressure, boiling point. Phase diagrams, structures of solids. Term Test II, Thursday, Mar 23, 6:00-8:00 (lab time)	11
12-13	Gases	Nature of gases, atmospheric pressure. Gas laws, ideal gas law, gas reaction stoichiometry, gas density, Daltons Law of partial pressures, kinetic molecular theory. Real gases, limitations of ideal gas law.	10
13-14	Chemistry of the Environment	Structure of Earth's atmosphere, ozone layer and its depletion, tropospheric pollution, greenhouse effect and photochemical smog. Oceans and freshwater.	13

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
a) Online Mastering Assignments Homework 1 - 6 : total of 170 points	20%
b) Laboratory component	25%
c) 2 Term Tests: 12.5 % each.	25%
d) A 3-hour written final examination covering all the material in the course	30%
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>

a) Online assignment marks may not be carried over so you must **complete these before the due date**. You usually have several weeks to do these assignments so no excuses will be accepted, no exceptions.

b) Student **must pass both** the lecture portion and the laboratory portion in order to pass the course. **Minimum final score of 50% on laboratory work** is required. Your lab faculty will go over the lab component of Chem 120 and lab evaluation with you.

Below is the lab schedule for CHEM 120-003 (Thursday evening)

Lab Section	Mondays - Larry (001)	Thursdays - Larry (003)	Fridays – John (002)
Lab Time	1:30 pm – 4:20 pm	6:00 pm – 8:50 pm	9:30 am – 12:20 pm
Week I	1/9 Safety & Review	1/12 Safety & Review	1/13 Safety & Review
Week II	1/16 Stoichiometry of Reactions	1/19 Stoichiometry of Reactions	1/20 Stoichiometry of Reactions
Week III	1/23 Stoichiometry of Reactions	1/26 Stoichiometry of Reactions	1/27 Stoichiometry of Reactions
Week IV	1/30 Nickel	2/2 Nickel	2/3 Nickel
Week V	2/6 Iron	2/9 Iron	2/10 Iron
Week VI	2/13 Test I (1:30 - 4:00 pm)	2/16 Test I (6:00 – 8:00 pm)	2/17 Test I (9:30 am – 12 noon)
Week VII	2/20 Family Day	2/23 Reading Week	2/24 Reading Week
Week VIII	2/27 Copper	3/2 Copper	3/3 Copper
Week IX	3/6 Hard water	3/9 Hard water	3/10 Hard water
Week X	3/13 Experiment 9	3/16 Experiment 9	3/17 Experiment 9
Week XI	3/20 Test II (1:30 - 4:00 pm)	3/23 Test II (6:00 – 8:00 pm)	3/24 Test II (9:30 am – 12 noon)
Week XII	3/27 Experiment 10	3/30 Experiment 10	3/31 Experiment 10
Week XIII	4/3 Molecular Model	4/6 Molecular Model	4/7 Good Friday
Week XIV	4/10 Easter Monday	4/13	4/14 Material Review

- Note a medical note is not required for the one missed lab which you must inform the instructor by email (leel@camosun.ca) during the day of illness and no later than 3 days past the lab date. Otherwise, a zero for the missed lab.
- For subsequent missed labs where no medical note is provided, you may receive data from another student, but your grade will be 25% less for not performing the lab.

c) 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.**

d) 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](#) (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.