



CAMOSUN COLLEGE
School of Arts & Science
Department of Chemistry & Geoscience

CHEM-070-D02
College Prep Chemistry
Fall 2020

COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/chem.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

(a) Instructor	Neil Meanwell	
(b) Office hours	Tues, 3.30 pm– 4.30 pm; Wed, 11.30 am – 12.30 pm; Thurs, 3.30 pm - 4.30 pm; Fri, 9.30 am - 10.30 am and 11.30 am – 12.30 pm	
(c) Location	F 348 B	
(d) Phone	(250)-729-3838	Alternative: (250)-729-3838
(e) E-mail	meanwen@camosun.bc.ca	
(f) Website	N/A	

2. Intended Learning Outcomes

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

3. Required Materials

(a) Texts

(i) Chem 070 Course Notes and Problems Sets (David Stuss): available as a free electronic copy online in D2L or as a hard copy available at Camosun Bookstore (\$33.90)

(ii) Chem 070 Lab Manual (David Stuss): available as a free electronic copy online in D2L or as a hard copy available at Camosun Bookstore (\$33.90)

(b) Other

Scientific calculator – Sharp EL510RNB or Sharp EL-W535X are recommended.

4. Course Content and Schedule

- a) Lectures: Tues, 1.30 pm – 3.20 pm (online); Wed, 1.30 pm – 3.20 pm (online)
Laboratory sessions: Thurs, 1.30 pm – 3.20 pm (online)
- b) Written reports on laboratory work.
- c) End-of-Chapter Exercises.¹
- d) Approximately **ten** online quizzes set at regular intervals during the semester.
- e) Three written term tests.³
- f) A three-hour written final examination at the end of the course on **all** the material in the course.

Notes

1. These exercises sets will not be marked but you are recommended to do them as each chapter in the book is covered.
2. The quizzes are set on the Chem 070-D02 site on D2L.
3. The term test are set tentatively set for **week five**, **week nine** and **week thirteen** of the semester. The first term test will be on all the material covered in the course during the first four weeks. The second term test will be on all the material covered from week five to week eight. The third term test will be on all material covered from week nine to week twelve.

Brief Summary of Course Material with Chapter References

- 1. Measurements and Calculations** SI units, SI prefixes, metric conversions, scientific notation, measurements, calculations using measurements, density calculations, energy and energy calculations.
- 2. Introductory Terminology** The scientific method, physical and chemical changes, elements and compounds, mixtures, metals and non-metals, Dalton's atomic theory, atoms and molecules, subatomic particles, the nuclear atom, isotopes, ions and atomic masses.
- 3. Chemical Formulas and Names** Composition of a compound, number of units of a compound, formulas for compounds, naming compounds, chemical formulas for some common compounds.
- 4. Calculations Based upon Chemical Formulas** Molecular and formula masses, percentage by mass composition, the Mole concept, interconversions between moles and grams, moles of molecular and ionic substances, calculations involving numbers of particles, grams and moles, mass of an atom in grams.
- 5. Stoichiometry** Writing balanced equations, interpreting and using equations, stoichiometry calculations using equations, limiting reactant concept, percentage yield, heat and chemical reactions.
- 6. The Periodic Table and Electronic Distributions in Atoms** Chemical families, electron energy levels, energy sublevels and orbitals, electron arrangements in atoms, electron dot formulas, atomic size and periodic trends, ionization energy and periodic trends, chemical properties of elements and periodic trends.
- 7. Chemical Bonding** Ionic compounds and the ionic bond, molecular compounds and the covalent bond, multiple bonds, electronegativity concept and bond polarities, molecular geometry and polarity.

8. Gases Why gases exist, gas volume and pressure, units of pressure, gas volume and temperature, absolute temperature and the Kelvin scale, standard temperature and pressure (STP), partial pressures, relating gas volumes to the number of molecules, reaction stoichiometry for gases.

9. Liquids and Solutions The liquid state, hydrogen bonding, vapour pressure and boiling point, liquid solutions, solubility, concentrations of liquid solutions, dilution of a solution, electrolytes, ion concentrations, ionization, pH scale, stoichiometry of reactions in solution.

10. Organic Chemistry Why so many organic compounds? Structural formulas, isomers, hydrocarbons, alkanes, condensed structural formulas, alkenes, alkynes, cycloalkanes, aromatic hydrocarbons, alcohols, selected chemical reactions, polymerization reactions.

Tentative Laboratory Schedule

Week Number and Date (Thursday)	Experiment # and Title
1. (10 th September)	Safety lecture
2. (17 th September)	#1 Density
3. (24 th September)	#2 Identifying Liquids
4. (1 st October)	#3 Separating Mixtures
5. (8 th October)	Term Test 1
6. (15 th October)	#5 Recycling Copper
7. (22 nd October)	#6 The Iron and Copper Sulfate Reaction
8. (29 th October)	#7 The Copper and Silver Nitrate Reaction
9. (5 th November)	Term Test 2
10. (12 th November)	#8 Water of Hydration
11. (19 th November)	#9 Chemical Reactivity
12. (26 th November)	#12 Acid-Base Neutralization
13. (3 rd December)	Term Test 3
14. (10 th December)	Review

Important Dates: Thanksgiving Day: Monday, 12th October; Remembrance Day: Wednesday, 11th November; Last Day to Withdraw Without an Academic Penalty: Thursday, November 12th.

5. Basis of Student Assessment (Weighting)

- (a) Quizzes (equal weighting): 15% total
- (b) Tests: three term tests: 12% each, 36% in total
- (c) Final exam: 34%
- (d) Lab work: 15%

Notes

- (a) You must pass both the lecture and laboratory part of the course in order to pass the course overall.
- (b) The final exam can replace the mark of **one term test** if the mark for the final is superior. The final exam can also replace up to **three quizzes** if the mark for the final is superior.

6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

The science help centre (SHC), which offers support for students in biology, chemistry and physics, will be running again this semester in an online format using Blackboard Collaborate Ultra as the platform. The link for you to access it is:

<https://ca.bbcollab.com/guest/26ea0383a00444b39291183944267d53>

The scheduled hours of operation will be posted on D2L during the first week of the semester.

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.