



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

CHEM-070-001
College Prep Chemistry
Fall 2019

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	Mon: 10:30-11:30 am, 1.30 – 2.30 pm; Tues: 12.30-1.30 pm; Wed: 1.30-2.30 pm; Thurs: 11.30 am-12:30 pm
(c) Location	F 348B
(d) Phone	250-370-3448 Alternative: 250-729-3838
(e) E-mail	meanwen@camosun.bc.ca or chemhelp@shaw.ca
(f) Website	Not available

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) Principal Text: **CHEM 070 Course Pack** (Includes Course Notes, Lab Manual and Supplementary Problem Sets) by Les Waye (In-house).
- (b) Safety Glasses (compulsory for laboratory work).
- (c) Scientific Calculator

4. Course Content and Schedule

- a) Lectures: Mon, 11.30 am – 1.20 pm (E 344); Wed, 11.30 am – 1.20 pm (E 344)
Laboratory sessions: Thurs, 12.30 pm – 2.20 pm (Fisher 300)
- b) Written reports on laboratory work.
- c) End-of-Chapter Exercises.¹
- d) Six assignment sets distributed at regular intervals during the semester.
- e) Two 2-hour written midterm 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 assignments are taken in for marking and given credit towards the overall course mark.
- 3. The midterms are set for **week seven** and **week twelve** and will run in the laboratory time slots for those weeks. The first midterm will be on all the material covered in the course during the first six weeks. The second midterm will be on all the material covered from week six 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. (5 th September)	Safety lecture
2. (12 th September)	#1 Density
3. (19 th September)	#2 Identifying Liquids
4. (26 th September)	#3 Separating Mixtures
5. (3 rd October)	#4 Heat of Combustion
6. (10 th October)	#5 Recycling Copper
7. (17 th October)	Term Test #1
8. (24 th October)	No Lab - Lecture
9. (31 st October)	#7 The Copper and Silver Nitrate Reaction
10. (7 th November)	#9 Chemical Reactivity
11. (14 th November)	#11 Molar Volume of a Gas (Mg/HCl Reaction)
12. (21 st November)	Term Test #2
13. (28 th November)	#12 Acid-Base Neutralization
14. (5 th December)	Review

Important Dates: Thanksgiving Day: Monday, 14th October; Remembrance Day: Monday, 11th November; Last Day to Withdraw Without an Academic Penalty: Wednesday, November 6th.

5. Basis of Student Assessment (Weighting)

- (a) Assignments (six): 2.5% each, 15% total
- (b) Tests: two term tests: 15% each, 30% in total
- (c) Final exam: 35%
- (d) Lab work: 20%

Notes:

- 1) If it is advantageous to the student any term test or assignment set mark which is inferior to the final exam mark will be replaced by an equal weighting from the final exam.
- 2) You must pass the lecture and lab portions **separately** in order to pass the course.

6. Grading System

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

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

The Camosun Student Success Centre offers many support services including online Learning Skills Guides, Learning Circles, and one-one-one appointments. Students are encouraged to explore what is available here: <http://camosun.ca/services/writing-centre/learning-skills.html>

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.