



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

CHEM-175-X01
Chem Essentials for Civil/Mech
W 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	Daniel Dönnecke (lecture) Tatiana Popa (lab)
(b) Office hours	Friday 10:30-11:30 (Daniel)
(c) Location	Tec 232
(d) Phone	250 370 4447 Alternative:
(e) E-mail	donnecked@camosun.bc.ca PopaT@camosun.bc.ca
(f) Website	

2. Intended Learning Outcomes

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

1. Use dimensional analysis, metric and SI units in performing chemical calculations.
2. Utilize the specialized vocabulary and nomenclature of chemistry and demonstrate an ability to name chemical compounds.
3. Identify and construct chemical formulas.
4. Communicate an understanding of atomic structure, the differences between elements, and the role of the periodic table in organizing elements within a coherent theoretical and empirical system.
5. Perform mathematical calculations involving chemical formulas, molecular weights, moles, Avogadro's number and Molarity.
6. Balance chemical equations, demonstrate an understanding of the mole concept and solve stoichiometry problems.
7. Conduct experiments in basic chemistry utilizing common chemistry laboratory equipment with practice in basic lab skills.

3. Required Materials

(a) **Texts:** Chem 175 Course Package from the book store is required.

(b) **Other:** Lab:

The lab Manual is in the course pack. **Bring it to each lab.** It contains the procedures for the experiments you are conducting. Come prepared. Having read and understood the lab manual will save you valuable lab time. You also need to bring a pair of **safety glasses** and a **lab coat** (or cover up your skin with long pants and a sweater). **Wear suitable shoes.** Flip flops or other open toed footwear is not permitted. You will not be allowed in the lab without safety glasses.

4. Course Content and Schedule

Lectures: Thursdays from 10:30-11:20 in Tech 110 and Fridays from 13:30-14:20 in Tech 173

Laboratory: Wednesdays 12:30 - 14:20 am, Tech 230 **alternate weeks**

Detailed outline

Week	Activity
1	Safety in the Chemistry Laboratory
2	Lab 1 Density
3	No lab Term Test 1 (50 min, during lecture time)
4	Lab 3 Separating Mixtures
5	No Lab
6	Lab 4 Heat of Combustion

Term Test 2 (50 min, during lecture time)

Family Day, 17 Feb. College closed

7 **Reading Break**

Conversations Day, 21 Feb. College closed

8 *No Lab*

9 *Lab 6* The Iron and Copper Sulfate Reaction

10 *No Lab*

Term Test 3 (50 min, during lecture time)

11 *Lab 12* Neutralization

12 *No Lab*

13 *Lab 10* Volume of a Gas

Term Test 4 (50 min, during lecture time)

14 *No Lab*

Good Friday, 30 March, College closed

Final Examination Period

Note that the Lab # refers to the number of the lab as in the lab manual:

Detailed Lecture Outline (approximate):

The International System of Units (SI), SI prefixes, metric conversions, scientific notations, measurements, calculations with measurements, density calculations, energy.

Scientific method, physical and chemical change, elements and compounds, mixtures, metals and non-metals, Daltons atomic theory, atoms and molecules, subatomic particles, nucleus, isotopes, ions, atomic mass.

Chemical formulas and names, composition of a compound, formulas, naming molecular compounds, naming ionic compounds, naming acids.

Calculation bases upon formulas, molecular and formula masses, percent composition, the mole, converting moles to mass and mass to moles.

Stoichiometry, writing balanced reaction equations, interpreting equations, problems based on equations, limiting reactant, percent yield, heat and chemical reactions.

Periodic table, chemical families, electron distribution in atoms, trends in atomic properties, Atomic radius, ionization energy, electron affinity, trends in chemical properties.

Chemical bonding, formation of ionic compounds, formation of molecular compounds, bond polarity, electronegativity, molecular geometry and polarity.

Gases, volume and pressure, units of pressure, volume and temperature, Kelvin scale and absolute temperature, partial pressure, volume and numbers of molecules, gas stoichiometry

5. Basis of Student Assessment (Weighting)

Term Tests (four) 45 % in total (your three best term tests contribute 15 % each)

Lab	17 %
Final Exam	38 %

There are problem sets at the end of each chapter in the course pack to help you prepare for exams. These problem sets are not graded but answer keys are provided at the end of each chapter. You are not expected to work through every single question. Do as many of them as you need to feel comfortable with the topic.

Four 50 min term tests will be written during lecture time of week 3, 6, 10 and 13.

A 3 hour final examination will cover material from week 1 to week 14.

Attendance in the lab is mandatory. If you miss more than two labs unexcused you have failed the lab. You must pass the lab to pass the course. You must also pass the final exam to pass the course. A lab that is missed, an exam that is not written or a lab report that is not handed in, within a week, counts as zero towards your course grade. Exceptions can be made if a valid excuse is produced in writing to the instructor (such as a note from a medical doctor) as soon as possible. It is important to let me know what is happening. **Send me an e-mail if you cannot attend a lab or an exam.**

6. Grading System

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

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

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.