CAMOSUN COLLEGE	**School of Arts & Science** **CHEMISTRY AND GEOSCIENCE DEPARTMENT** **CHEM 175** **Chem Essentials for Civil/Mech** **W 2017**

COURSE OUTLINE

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

Ω *Please note: the College electronically stores this outline for five (5) years only.*
*It is **strongly recommended** you keep a copy of this outline with your academic records.*
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

(a)	Instructor:	Daniel Donnecke		
(b)	Office Hours:	Th 11:30-12:20		
(c)	Location:	Tec 232-Tec 230		
(d)	Phone:	250 370 4447	Alternative Phone:	
(e)	Email:	donnecked@camosun.bc.ca		
(f)	Website:			

2. Intended Learning Outcomes

(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

Upon completion of this course a 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: 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 safe 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 shoos.** 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

(This section can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

Timetable

Lectures: Monday and Wednesday from 3:30-4:20 pm in Tech 173

Laboratory: Thursday 9:30 - 11:20 am, Tech 230 **alternate weeks**

Detailed outline (schedule subject to availability of equipment)

Week	Activity
1	Lab safety **followed by** *Lab 1* Density
2	Lab safety **followed by** *Lab 1* Density
3	*Lab 3* Separating Mixtures
4	*Lab 3* Separating Mixtures **Term Test 1** (50 min, during lecture time)
5	*Lab 4* Heat of Combustion
6	**Family Day, 13 Feb. College closed** **Reading Break** **Conversations Day, 17 Feb. College closed**
7	*Lab 4* Heat of Combustion **Term Test 2** (50 min, during lecture time)
8	*Lab 12* Neutralization
9	*Lab 12* Neutralization
10	*Lab 10* Volume of a Gas **Term Test 3** (50 min, during lecture time)
11	*Lab 10* Volume of a Gas
12	

Lab 7 The Copper and Silver Nitrate reaction

13 *Lab 7* The Copper and Silver Nitrate reaction

Term Test 4 (50 min, during lecture time)

14 No lab during last week of classes

Good Friday, 14 April, College closed

Easter Monday, 17 April, 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, isotops, 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)

(This section should be directly linked to the Intended Learning Outcomes.)

(**Evaluation** **Grading as in Camosun College Calendar**

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 4, 7, 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

(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)

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	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

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 E-1.5 at **camosun.ca** for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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	*In progress*: A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)*

CW	*Compulsory Withdrawal:* 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.

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

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning.
This information is available in the College calendar, at Student Services, or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**.
It is the student's responsibility to become familiar with the content of this policy.
The policy is available in each School Administration Office, at Student Services,
and the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED