



## COURSE OUTLINE

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

⚡ 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:	John Lee		
(b)	Office Hours:	See posted times on F344A door		
(c)	Location:	F 344A		
(d)	Phone:	250 370 3446	twitter:	@johnatcamosun
(e)	Email:	leejohn@camosun.bc.ca		
(f)	Website:	D2L		

### 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 the 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.

### 3. Required Materials (Minimum)

- (a) **Mastering Chemistry Course Code.** \$66. A Mastering Chemistry Access Code can be purchased from the bookstore. If you choose to purchase a new textbook or ebook (see below) then this includes a Mastering Chemistry Course Code. It is valid for 24 months after activation.
- (b) Chemistry 120 Laboratory Manual, Fall 2013 Edition (Neil Meanwell)

### Other Recommended Materials for the Course

Chemistry, The Central Science, Brown, le May, Bursten. Custom Camosun Edition. \$145. (For hard copy and access code). Ebook and access code \$110. Available from the Camosun Bookstore  
The 2<sup>nd</sup> and 1<sup>st</sup> Australian editions are also acceptable if you have a used book. **If you buy a used book that is not the most recent edition you will still need to purchase a Mastering Chemistry access code.**

Chemistry 100, Camosun College course pack is a good source of review material for those students who may have been away from Chemistry for a while.

### 4. Course Content and Schedule

Subject	Material Covered	Lecture Hours (approximate)	Textbook chapters
<b>Intro and Review</b>	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.	3	1,2, 3 and 4
<b>Electronic Structure of Atoms</b>	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	6
<b>Periodic Properties</b>	Development of the periodic table, effective nuclear charge, atomic and ionic radius, ionisation energy, electron affinity.	3	7
<b>Chemical Bonding</b>	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	5	8
<b>Molecular Geometry</b>	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	5	9
<b>Intermolecular Forces, Liquids and Solids</b>	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.	5	11
<b>Gases</b>	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	5	10
<b>Chemistry of the Environment</b>	Structure of Earth's atmosphere, ozone layer and its depletion, tropospheric pollution, greenhouse effect and photochemical smog. Oceans and freshwater.	3	18

**Lecture Times: Mondays in F 212: All Lectures at 5.30 pm - 8.20 pm. Laboratory classes: Wednesday 5.30 to 8.20 pm F 356.**

**Midterm dates: See the lab schedule at the end of the document**

### 5. Basis of Student Assessment (Weighting)

The course mark will be derived in the following manner:

Midterm tests	20 %
Environment Essay	4 %

Photo assignment	1 %
Final test	25 %
Laboratory work	25 %
Online Assignments	25 %

If it is advantageous to the student the theory mark will be solely derived from the final examination, or a combination of midterm with the final. **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.**

In the event of the midterm test being missed due to illness/other commitments the weight of the missed test will be carried over to the final.

### The Laboratory Mark

The breakdown of the Laboratory mark is as follows:

Pre-lab assignments (completed prior to starting the lab class).	15 %
<b>Quality of Lab Reports/Assignments</b>	<b>85 %</b>

No more than **2 laboratory classes may be missed**, during the course. In the event of a student being unable to attend a laboratory class it is advised that the student attempt to obtain data from a partner or perform the class with another section in order to complete the assignment/report. It is essential that you give your lab instructor the courtesy of an email in the event that you miss a laboratory class.

A student that attends the laboratory class but does not present a written report will receive a (maximum) score of 40%.

Students are responsible for obtaining their own safety glasses and laboratory jacket from the bookstore. It is not the responsibility of the College to provide you with safety equipment.

## 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](http://camosun.ca) 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, 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. <i>(For these courses a final grade will be assigned to either the 3<sup>rd</sup> course attempt or at the point of course completion.)</i>
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.

## 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](http://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

**Fall 2016 - Chem 120-003 Provisional Lab Schedule**

Wednesdays; 5:20 pm - 8.20 pm in Fisher 356

Note: This is only a preliminary lab schedule, changes will be made due to equipment &/or scheduling of other sections... Lab coat and eye protection are both mandatory!!

Week Number Begins on Monday	Activity & Experiment Number	Actual Date of Lab Wednesdays
I Sep 5 <sup>th</sup>	Lab Safety and Quiz: Attendance Mandatory unless previous lab credit has been granted	Sep 7 <sup>th</sup>
II Sep 12 <sup>th</sup>	Expt. 2 Densities of Solids & Liquids	Sep 14 <sup>th</sup>
III Sep 19 <sup>th</sup>	Group A Expt. 3 Stoichiometry of Chem. Rxns	Sep 21 <sup>st</sup>
IV Sep 26 <sup>th</sup>	Group B Expt. 3 Stoichiometry of Chem. Rxns	Sep 28 <sup>th</sup>
V Oct 3 <sup>rd</sup>	Midterm test	Oct 5 <sup>th</sup>
VI Oct 10 <sup>th</sup>	Expt. 4 The Spectroscopic Determination of Nickel in Aqueous Solution	Oct 12 <sup>th</sup>
VII Oct 17 <sup>th</sup>	Expt. 5 Colorimetric Determination of Iron in a Vitamin Tablet	Oct 19 <sup>th</sup>
VIII Oct 24 <sup>th</sup>	Expt. 6 Determination of Copper Using Atomic Absorption Spectroscopy	Oct 26 <sup>th</sup>
IX Oct 31 <sup>st</sup>	Expt. 7 Hard Water determination	Nov 2 <sup>nd</sup>
X Nov 7 <sup>th</sup>	Class TBD	Nov 9 <sup>th</sup>
XI Nov 14 <sup>th</sup>	Midterm test	Nov 16 <sup>th</sup>
XII Nov 21 <sup>st</sup>	Expt. 9 The Preparation of Potassium Tris(oxalato)Ferrate(III)	Nov 23 <sup>rd</sup>
XIII Nov 28 <sup>th</sup>	Expt. 10 Analysis & Uses of Potassium Tris(oxalato)Ferrate(III)	Nov 30 <sup>th</sup>
XIV Dec 5 <sup>th</sup>	Review	Dec 7 <sup>th</sup>
Final Exam Period	Final Exams Dec 12 <sup>th</sup> to Dec 20 <sup>th</sup>	