



**SCHOOL OF ARTS & SCIENCE  
CHEMISTRY AND GEOSCIENCE DEPARTMENT**  
**CHEM 110-002**  
**General College Chemistry 1**  
**W2015**

## COURSE OUTLINE

The Approved Course Description is available on the web @camosun.bc.ca

Ω Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.

### 1. Instructor Information

Instructor:	Steve McKinnon
Office Hours:	TBA
Location:	F348A
Phone:	250-370-3472
Email:	mckinnons@camosun.bc.ca
Website:	D2L

### 2. Intended Learning Outcomes

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

1. Identify, describe and account for the general characteristics of gases, liquids and solids - interionic and intermolecular forces; vaporization and condensation; melting and freezing; specific characteristics of water.
2. Utilize solution terminology, account for and compare the solubilities of ionic and molecular compounds, and describe the impact of temperature and pressure on solubility.
3. Describe the characteristics of solubility equilibria and use mathematical techniques employed in dealing with this phenomenon.
4. Describe and account for the colligative and osmotic properties of aqueous solutions.
5. Account for differences in the rates of chemical reactions, apply Le Chatelier's Principle to equilibrium processes, and explain how catalysts influence reaction rates.
6. Apply mathematics and equilibrium constant expressions to descriptions of reversible reactions and chemical equilibria.
7. Identify Arrhenius, Bronsted and Lewis acids and bases, and describe the chemical properties of each type of substance.
8. Describe the ionization of water, the pH scale, weak and strong acids and bases, neutralization and the actions of buffer solutions.
9. Perform mathematical calculations involving pH, hydronium ion concentrations and acid-base titrations.
10. Define oxidation and reduction and assign oxidation numbers to the elements of substances involved in oxidation-reduction reactions. Demonstrate the ability to use oxidation numbers in balancing redox reactions.

11. Demonstrate an understanding of electrochemistry and account for the characteristics and uses of the standard hydrogen electrode, standard reduction potentials, electrolytic and voltaic cells.
12. Describe the characteristics of the major types of organic compounds – alkanes, alkenes, alkynes, aromatic hydrocarbons, alcohols, ethers, aldehydes and ketones, carboxylic acids and esters, amines and amides.

### 3. Required Materials

Texts	<p><b>Recommended/Optional</b>—to be used for reading only...</p> <ul style="list-style-type: none"> <li>◆ “Chemistry, The Central Science: Australian Edition” (Chem 120 &amp; 121) 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> ed.</li> <li>◆ “Chemistry, The Central Science” by Brown, LeMay, &amp; Bursten (a.k.a. B-L-B), 9<sup>th</sup>/10<sup>th</sup> Ed.—the older editions once used for Chem 120/121,</li> </ul>
Other	<ul style="list-style-type: none"> <li>◆ Chem 110 Lab Manual (Safety glasses are mandatory! Lab coats are recommended)</li> </ul>

### 4. Course Content and Schedule

Lecture Plan:			
Unit	Topic (approx. # of lecture hours)	B-L-B 3 <sup>rd</sup> Aust. Ed	B-L-B (9 <sup>th</sup> /10 <sup>th</sup> Ed.)
1	Thermochemistry (8)	Ch. 14	Ch. 5 & 19
2	Chemical Kinetics (5)	Ch. 15	Ch. 14
3	Chemical Equilibrium (5)	Ch. 16	Ch. 15
4	Solution & Solubility (5)	Ch. 2, 4, 12, 18	Ch. 2, 4, 17
5	Acid-Base Equilibria (6)	Ch. 2, 4, 17	Ch. 4, 16, 17
6	Ionization & Neutralization (5)		
7-I	Oxidation & Reduction (4)	Ch. 4	Ch. 4 & 20
7-II	Electrochemistry (3)	Ch. 19	Ch. 20

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

Labs (up to 9 experiments)	20%
Test I (Units 1 & 2)	20% (Week VII Lab Period)*
Test II (Units 3, 4, & 5)	20% (Week XII Lab Period)*
Final Exam (comprehensive)	40% (TBA 3 hours in April)

\* Test dates to be confirmed during the first week of classes.

#### Notes:

- (1) Student must pass the lab portion of the course to obtain credit for Chem 110. At least 70% of the lab work must be submitted for marking and a minimum mark of 50% overall must be achieved to pass.
- (2) Test scores that are not as high as that of the April final exam will be dropped automatically and its weight redistributed to the final exam. However, anyone who is caught cheating will receive zero for that test which will not be redistributed. For anyone who misses both tests, your final exam will then be 80% of the course grade!

(3) Student must write each test in the lab period as scheduled for his/her section. No one is allowed to write late and there will be no exceptions.

## 6. Grading System

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO 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. Important Dates

Week

V	Feb 8 (Mon): Family Day - College Closed
VI	Feb 18 & 19 (Thu & Fri): Reading Break – College Closed
VII	Feb 26 (Fri): <b>Test I</b> 14:30-16:30.
X	Mar 14 (Mon): Last Day to Withdraw or Change to Audit...
XI	Mar 25 (Fri): Good Friday – College Closed
XII	Mar 28 (Mon): Easter Monday – College Closed
XII	Apr 1 (Fri): <b>Test II</b> 14:30-16:30.

Final Exams: April 18-23, 25, 26

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

Articles in the Library Reserve Room for Chem 110, 120, & 121:  
(at least one copy of each of the followings)

- ◆ “Chemistry: Principles & Reactions” by Masterton & Hurley, 5<sup>th</sup> Ed.
- ◆ “Chemistry, The Central Science” by Brown, LeMay, & Bursten, 9<sup>th</sup>, 10<sup>th</sup>, & Australian editions. Solutions Manual, Student’s Guide & “Math Review Toolkit” are also available.

Online resource tool for the Australian B-L-B: [www.pearsoned.com.au/brown](http://www.pearsoned.com.au/brown).

### 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 on the College web site in the Policy Section.

## Chem 110 Preliminary Lab Schedule

Friday, 14:30 - 17:20 in Fisher 354

Week	Date	Experiment
I	1/11	Orientation and review
II	1/22	Expt. 4 – Precipitation Reactions
III	1/29	Expt. 6 – Acid-base Titrations
IV	2/5	Expt. 1 – Heat Changes
V	2/12	Expt. 2 – Reaction Rates
VI	2/19	No Lab – Reading Break
VII	2/26	<b>Test I in Fisher 354 14:30-16:30</b>
VIII	2/4	Expt. 3 – Shifting Equilibria
IX	3/11	Expt. 7 – Titration of Aspirin, Vitamin C, and Milk of Magnesia
X	3/18	Expt. 11 – Oxidation of Iron
XI	3/25	No Lab – Good Friday
XII	4/1	<b>Test II in Fisher 354 14:30-16:30</b>
XIII	4/8	Expt. 12 - Electrochemistry
XIV	4/15	Exam Info & Review

Note: This is only a preliminary lab schedule, changes will be made due to equipment &/or glassware problems, or rescheduling of tests...

**Eye protection is mandatory!!**