



**School of Arts & Science**  
**CHEMISTRY AND GEOSCIENCE DEPARTMENT**

**CHEM 110-01**  
**General College Chemistry 1**  
**2016W**

## COURSE OUTLINE

The Approved Course Description is available on the web @ [camosun.bc.ca](http://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

(a)	Instructor:	Blair Surridge		
(b)	Office Hours:	M: 12:30 – 2:30 T & Th: 10:30 -11:20		
(c)	Location:	F350A		
(d)	Phone:	370-3438	Alternative Phone:	
(e)	Email:	<a href="mailto:SurridgeB@camosun.bc.ca">SurridgeB@camosun.bc.ca</a>		

### 2. Intended Learning Outcomes

(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

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

(a)	Text	"Chemistry, The Central Science: a broad perspective" by Brown et. al., 2014—a.k.a. B-L-B Camosun Custom Edition
(b)	Safety Glasses	Book store has "Uvex" safety eyewear – please check if using others
(c)	Lab coat	Bookstore has cloth coats available – please check if using another type
(d)	Lab Manual	Chem 110 laboratory manual

### 4. Course Content and Schedule

#### Lectures:

Monday	8:30 to 9:20 am in E201
Tuesday	9:30 to 10:20 pm in WT101
Thursday	9:30 to 10:20 pm in F210

Unit	Topic	Textbook Readings
1a	<b>REVIEW ON YOUR OWN:</b> Matter, units of measure and uncertainty, Atomic and Electronic Structure and basic bonding	Ch. 1 (in detail) Ch. 6 and 8 (parts only see class notes)
1b	<b>REVIEW IN CLASS:</b> Periodic Table, Naming Molecules and Ions, Stoichiometry Solutions and Molarity, Ionic Equations, Acids and Bases, and Oxidation-Reduction	Ch. 2 and Ch. 3 (In detail)  Ch. 4 (Emphasis will be on precipitation rxns (4.2), molarity (4.5), and solution stoichiometry (4.6))
2	Thermochemistry	Ch. 14 Omit sections 14.8 to 14.13
3	Chemical Kinetics	Ch. 15 Omit sections 15.4, 15.5, 15.6, and 15.7
4	Chemical Equilibrium	Ch. 16 Omit sections 16.7
5	Solution and Solubility	Ch. 12 OmitBB sections 12.5 and 12.6
6	Acids and Bases	Ch. 14 Omit sections 14.8, 14.9, & 14.11
7(Part 1)	Oxidation/Reduction	Ch. 4 (section 4.4)
7(Part 2)	Electrochemistry	Ch. 19 Omit section 19.5 and 19.6

#### Chem. 110-001 Lab Schedule, Monday 2:30-5:20 in F354 (Subject to Change)

Week	Lab Date	Experiment
I	Jan 11 <sup>th</sup>	Lab Orientation/Review
II	Jan 18 <sup>th</sup>	Exp # 4, Precipitation Reactions

III	Jan 25 <sup>nd</sup>	Exp # 6, Analysis of Vinegar
IV	Feb 1 <sup>th</sup>	Exp # 1, Energy Changes
V	Feb 8 <sup>th</sup>	No Lab Scheduled (Family Day)
VI	Feb 15 <sup>th</sup>	Exp # 2, Reaction rates
VII	Feb 22 <sup>nd</sup>	<b>Midterm (2.0hrs)</b>
VIII	Feb 29 <sup>th</sup>	Exp # 3, Shifting Equilibria
IX	Mar 7 <sup>th</sup>	Exp # 7 Analysis of tablet products
X	Mar 14 <sup>th</sup>	<b>Tutorial and review</b>
XI	Mar 21 <sup>st</sup>	Exp # 11 Oxidation of Iron
XII	Mar 28 <sup>th</sup>	No Lab Scheduled (Easter Monday)
XIII	Apr 4 <sup>th</sup>	Exp# 12 Electrochemistry
XIV	Apr 11 <sup>th</sup>	Review for Final Exam

## 5. Basis of Student Assessment (Weighting)

Labs	20%
Quizzes	20% (In class <sup>1</sup> )
Midterm Test (Units 2, 3, & 4 )	20% (Week VIII Lab Period, 2.0 hours) <sup>2</sup>
Final Exam (comprehensive)	40% (TBA ~Week XV, 3 hours in April)

1. Tentatively seven quizzes scheduled. You will receive at least 4 days of notice before a quiz and details will be posted on D2L!!
2. Expect units 2, 3, and parts of unit 4 on the midterm.

### Important Notes:

- (1) This course **cannot** be done as an online course and student are expected to come to class. Missing classes typically leads to an F grade in the course.
- (2) Students are expected to check D2L every couple of days for the following;
  - Class notes which can be printed in a computer lab or at home
  - News postings for announcements (e.g. – info regarding to labs, quizzes, and exams)
  - Accessing homework information and answers (blair's questions and end of chapter questions)
  - Handouts and notes that were provided in class
- (3) **Students must pass the lab portion and the lecture portion** of the course to obtain credit for Chem 110. All labs are to be attended and individual lab reports completed. If a lab is missed contact must be made with the instructor to make arrangements. Lab reports that are not handed in could lead to a failing mark.
- (4) At the discretion of the instructor a student who is repeating this chemistry course may apply for lab exemption.
- (5) Immediate contact must be made with instructor for missed labs and tests due to illness or family emergencies for arrangements to be made.
- (6) A test score that is not as high as that of the April final exam will be dropped automatically and its weight redistributed to the final exam. For example, if the midterm test is missed your final exam will then be 60% of the course grade!
- (7) No one is allowed to write tests late and there will be no exceptions. Early writing is a privilege and not a right; thus, at full discretion of the instructor.

## 6. Grading System

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

**Prerequisite:** Chem 100 or Chem 11 (C grade minimum)

## Chemistry Study Tips and Learning Guide

### Pre-lecture:

- Take the time to come to class prepared. Read ahead of time and refer to the text to become familiar with lecture topics. This will greatly aid in understanding of new topics in lecture. This should not take a lot of time (10-15 mins). If you have questions write them down and ask in class if you don't get an answer.
- Work on assigned questions and have questions ready to ask either in class or in office hours.

### Lecture Note Taking

- Have a blank sheet of paper to take additional notes. Always record day and date of lecture to stay organized.
- Attempt to use short-hand (speed writing) when ever possible
  - eg – reaction (rxn), increase ( $\uparrow$ ), equilibrium (equil), heat ( )etc $\Delta$  this will allow more time for focusing on lecture
- Make note of important concepts which will most likely appear on test
- Ask questions in class at any time.

### Post Lecture

- Read more closely the material in the text book especially material that has been emphasized.
- Work on assignments and questions. Work on knowing the step by step approach and try not memorize different forms of equations.
- Go over definitions as there will be more every week, chemistry has a lot of jargon.

### Exams

- Review lecture notes and assignments and detailed summary handouts
- Spend time on material that is stressed in class
- Always attempt every question and write something down for part marks

*Remember help is available so please drop-in for office hours if you have questions regarding lecture, homework questions, lab, or exams*