



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

**CHEM 121-04**  
**College Chemistry 2**  
**2009W**

## COURSE OUTLINE

The Approved Course Description is available on the web @ \_\_\_\_\_

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:	John Lee
(b)	Office Hours:	Monday Tuesday, Thursday and Friday: 11:30-12:30, (Note: Additional office hours by appointment)
(c)	Location:	F344B
(d)	Phone:	370-3446
(e)	Email:	<a href="mailto:johnmlee@shaw.ca">johnmlee@shaw.ca</a>
(f)	Website:	<a href="http://camosun.ca/learn/programs/chem.html">http://camosun.ca/learn/programs/chem.html</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. Utilize the specialized vocabulary and nomenclature based on the IUPAC system of organic compounds to name and draw structures for many simple organic compounds containing the common functional groups.
2. Write chemical reactions to illustrate numerous transformations between organic functional groups.
3. Draw structural and stereoisomers of organic compounds and name isomers based upon the IUPAC system of nomenclature.
4. Demonstrate an understanding of the factors that influence the rate of a chemical reaction, deduce the rate of a chemical reaction from time/concentration data, and utilize rate laws to perform kinetic calculations.
5. Apply the laws of thermodynamics and account for the factors that lead to spontaneous physical and chemical changes.
6. Explain how enthalpy is related to internal energy and PV work
7. Explain how and why reactions attain equilibrium positions and perform calculations pertaining to equilibrium systems.
8. Describe redox reactions, use electrochemical data to predict the spontaneity of redox reactions, and comprehend the structures of electrochemical cells.
9. Describe various acid-base theories and apply these theories to acid-base reactions in aqueous solution.
10. Perform experiments in the areas of preparative organic, preparative inorganic, physical and analytical chemistry and use the various associated pieces of laboratory equipment.

### 3. Required Materials

Texts	"Chemistry, The Central Science: a broad perspective" by Brown et al., 2007—a.k.a. B-L-B Australian Edition.
Other	<ul style="list-style-type: none"><li>◆ Chem 121 Lecture Notes Supplement &amp; Appendix by D. Li, 2009 Ed. This supplement goes with both 10<sup>th</sup> &amp; Australian editions of B-L-B although the Australian edition is preferred. Note: Homework questions selected from both editions are not necessarily identical but equivalent.</li><li>◆ Chem 121 Lab Manual</li><li>◆ Darling Molecular Model Kit—highly recommended if you are taking Chem 121 and other 2<sup>nd</sup> year Chemistry courses (Chem 230, 231, etc.)</li><li>◆ Safety glasses &amp; lab coat are both mandatory!</li></ul>

### 4. Course Content and Schedule

Lecture Plan:		
<u>Chapter</u>	<u>Topic (approximate number of lecture hours)</u>	
<b>Aust.</b> [10 <sup>th</sup> Ed.]		
<b>21-23</b>	Selected Topics in Organic Chemistry (10)	
<b>12</b>	[14] Chemical Kinetics (6)	
<b>4</b>	[5] Thermochemistry (4)	
<b>17</b>	[19] Thermodynamics (4)	
<b>13</b>	[15] Chemical Equilibrium (3)	
<b>14</b>	[16] Acid-Base Equilibria (4)	
<b>15</b>	[17] Additional Aspects of Aqueous Equilibria (4)	
<b>18</b>	[20] Electrochemistry (3)	

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

Labs (up to 9 experiments)	22%
Test I (Organic Chem)	18% (Week V Lab Period)*
Test II (Kinetics, Thermochem, & Thermodynamics)	20% (Week X Lab Period)*
Final Exam (comprehensive)	40% (TBA~Week VI, 3 hours in April)

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

#### Notes:

- (1) Student must pass the lab portion of the course to obtain credit for Chem 121. Your lab faculty will go over the lab component of Chem 121 and lab evaluation with you...
- (2) Students must write both midterms. Students unable to write either midterm should obtain proper exemption to have the weight of the missed test transferred to the final exam
- (3) Student must write each test as scheduled for his/her section. No one is allowed to write late and there will be no exceptions. Early exam is at the discretion of the instructor.

## 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. (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. Important Dates

Week

- V **Test I in Lab:** Feb 6 (Fr) 12.30-14.00.  
VII Reading Break: Feb 19 & 20 (Th & F).  
X Mar 9 (M): Last Day to Withdraw or Change to Audit...  
X **Test II in Lab:** Mar. 13 (Fr) 12:30-14:00.  
XIV Apr. 10 (F): Good Friday  
Apr. 13 (M): Easter Monday

April 14-18 & 20-22: Exam Period for Winter 2009

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

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

9<sup>th</sup> & 10<sup>th</sup> Editions B-L-B: Test & Solutions Manual, Student's Guide, "Math Review Toolkit" & "The Essential of Organic Chemistry" booklet. (Note: Short answers to all red numbered exercises are at the back of the Text.)

Australian B-L-B (2 copies) &

OneKey—a text-specific online resource tool: [www.pearsoned.com.au/brown](http://www.pearsoned.com.au/brown).

(Note: Answers to red & black numbered exercises are available from the CD that is packaged with the new text!)

### 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.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED

# Winter 2009 Lab Schedule

## Chem 121 (004) – Fridays in Fisher 356

Week Number Begins on	Activity & Experiment Number	Actual Date of Lab <b>Fridays</b>
I Jan 5 <sup>th</sup>	Lab Orientation— attendance mandatory	Jan 9 <sup>th</sup>
II Jan 12 <sup>th</sup>	Expt. 1 The Preparation of Xylene Sulphonic Acid	Jan 16 <sup>th</sup>
III Jan 19 <sup>th</sup>	Gp A: Expt. 3 Production & Isolation of Benzoic Acid; Gp B: Organic Tutorial	Jan 23 <sup>th</sup>
IV Jan 26 <sup>th</sup>	Gp B: Expt. 3 Production & Isolation of Benzoic Acid; Gp A: Organic Tutorial	Jan 30 <sup>th</sup>
V Feb 2 <sup>nd</sup>	Test I in Lab (1.25 hours)	Feb 6 <sup>th</sup>
VI Feb 9 <sup>th</sup>	Expt. 2 Preparation of a Standard Solution & the Analysis of an Unknown Acid	Feb 13 <sup>th</sup>
<b>VII Feb 19<sup>th</sup> &amp; 20<sup>th</sup></b>	<b>Reading Break &amp; Connections Day</b>	<b>College closed on Friday for Connections Day</b>
VIII Feb 23 <sup>rd</sup>	Expt. 6 The Rate of Bromination of Acetone	Feb 27 <sup>th</sup>
IX Mar 2 <sup>nd</sup>	Expt. 4 Banana Oil Synthesis or Expt. 5 Simple & Fractional Distillation	Mar 6 <sup>th</sup>
X Mar 9 <sup>th</sup>	Test II in Lab (1.25 hours)	Mar 13 <sup>th</sup>
XI Mar 16 <sup>th</sup>	Expt. 10 Thermochemistry	Mar 20 <sup>th</sup>
XII Mar 23 <sup>rd</sup>	Expt. 8 The Gravimetric Determination of Chloride Ions	Mar 27 <sup>th</sup>
XIII Mar 30 <sup>th</sup>	Exam Info & Review	Mar 3 <sup>rd</sup>
XIV Apr 6 <sup>th</sup>	Expt. 9 Synthesis of Copper (I) Chloride	Maybe substituted in-place of one of the labs above
Fri, April 10 <sup>th</sup> & Monday, Apr 13 <sup>th</sup> Good Friday & Easter Monday College Closed	Final Exams April 14 <sup>th</sup> to April 18 <sup>th</sup> & April 20 <sup>th</sup> to April 22 <sup>nd</sup>	Final Exam Period

**Note:** This is only a preliminary lab schedule, changes will be made due to equipment &/or glassware problems, or rescheduling of tests... Lab coat and eye protection are both mandatory!!