

# Camosun College CHEM 150A, Engineering Chemistry 1

Winter Quarter - January to March, 2003

**Instructor:** Blair Humphrey, CBA 146, Telephone 370-4447 e-mail: [humphreb@camosun.bc.ca](mailto:humphreb@camosun.bc.ca)  
web site: [www.camosun.bc.ca/~humphreb/](http://www.camosun.bc.ca/~humphreb/) Office hours: Wednesday 1030-1220

**Text:** Brown, Lemay and Bursten, Chemistry: The Central Science 9th ed. The Solution Guide is optional but recommended.

**Lab. Manual:** On the web site; [www.camosun.bc.ca/~humphreb/c150ab.htm](http://www.camosun.bc.ca/~humphreb/c150ab.htm) and follow the links.

**Intended learning outcomes:** the student will be able to:

- Calculate outcomes of chemical reactions based on stoichiometric quantities in general and in aqueous solutions in particular.
- Describe the electronic configuration of atoms and explain why some atoms have unusual configurations.
- Determine the shape and symmetry of molecules based on atomic, molecular, and hybrid orbitals.
- Explain the impacts of bond polarity on molecular interactions on the physical states (phases) of molecules.
- Determine the properties of polymers, ceramics and other engineering materials based on bonding and molecular interactions.

## Grading as in calendar, p 39

Laboratory (5)	10%
Quizzes (5)	20%
Midterm (1)	20%
Final	50%
<b>Total</b>	<b>100%</b>

Quizzes will be held at the start of a Thursday afternoon session, and will be on topics of the previous week only.

There is a new regulation for the Civil Bridge Program: a student **MUST** pass the final exam to pass the course.

## Course Outline

Date	Topic	
	Morning	Afternoon
Jan. 8		Registration, lab safety introduction
Jan. 9	Measurement and the scientific method, atoms, elements, molecules	Compounds, mixtures, ionic and covalent molecules, the mole
Jan. 15		Laboratory #1: Density Group 1
Jan. 16	The periodic table	<b>Quiz 1;</b> Nomenclature: naming compounds
Jan. 22		Laboratory #1: Density Group 2
Jan. 23	Chemical reactions	Stoichiometry
Jan. 29		Laboratory #2: Stoichiometry Group 1
Jan. 30	Thermochemistry	<b>Quiz 2;</b> Thermochemistry
Feb. 5		Laboratory #2: Stoichiometry Group 2
Feb. 6	Atomic structure	Atomic structure
Feb. 12		Laboratory #3: Spectroscopic determination of nickel. Group 1
Feb. 13	Atomic structure	<b>Midterm</b>
Feb. 19		Laboratory #3: Spectroscopic determination of nickel. Group 2
Feb. 20	Molecular structure	Molecular structure
Feb. 26		Laboratory #6: Thermochemistry Group 1
Feb. 27	Molecular shape,	<b>Quiz 3;</b> Molecular shape
Mar. 5		Laboratory #6: Thermochemistry Group 2
Mar. 6	Intermolecular forces, gases	<b>Quiz 4;</b> Gases
Mar. 12		Laboratory #5: VSEPR Group 1
Mar. 13	Liquids and solids, polymers	<b>Quiz 5;</b>
Mar. 19		Laboratory #5: VSEPR Group 2
Mar. 20	Modern materials	Review
Mar. 24-28	Exam period	

**Blair's timetable Q2, 2003**

	Monday	Wednesday	Thursday	Friday	
--	--------	-----------	----------	--------	--

	<b>Tuesday</b>				
<b>830-920</b>		<b>C160 Tech 230</b>			
<b>930-1020</b>		<b>C160 Tech 230</b>			
<b>1030-1120</b>				<b>C150A Tech 230</b>	
<b>1130-1220</b>	<b>Office CBA 146</b>	<b>At Lansdowne</b>	<b>Office CBA 146</b>	<b>C150A Tech 230</b>	<b>Office CBA 146</b>
<b>1230-1320</b>	<b>Office CBA 146</b>	<b>At Lansdowne</b>	<b>Office CBA 146</b>		<b>C160 Lab Tech 230</b>
<b>1330-1420</b>	<b>C160 Tech 230</b>	<b>At Lansdowne</b>	<b>C150A Lab Tech 230</b>	<b>Office CBA 146</b>	<b>C160 Lab Tech 230</b>
<b>1430-1520</b>	<b>C160 Tech 230</b>	<b>At Lansdowne</b>	<b>C150A Lab Tech 230</b>	<b>Office CBA 146</b>	
<b>1530-1620</b>		<b>C150A</b>	<b>Lab Tech 230 C150A Tech 230</b>		
<b>1630-1720</b>					