Camosun College CHEM 150A, Engineering Chemistry 1

Winter Quarter - January to March, 2004

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

Text: Fine, Beall & Stuehr, 2000. **Chemistry for Scientists and Engineers**, Prelim. Edn., Saunders

Lab. Manual: On the web site; www.camosun.bc.ca/~humphreb/c150ab.htm and follow the links.

Timetable

Lectures: Monday 10:30-12:20, Thursday 10:30-11:20 Laboratory: Wednesday, 13:30:16:20 Alternate weeks

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.

• Calculate the properties of ideal gases.

• Describe the differences between ideal and non-ideal gases.

Grading as in calendar, p 39

Laboratory (5)	10%
Quizzes (4)	20%
Midterm (1)	20%
Final	50%
Total	**100%**

Course Outline

Date	**Topic**	**Text chapter**

Jan. 5	Registration, lab safety introduction Measurement and the scientific method, atoms, elements, molecules	1, 2
Jan. 7	Laboratory #1: Density Group 1	
Jan. 8	Compounds, mixtures, ionic and covalent molecules, the mole	2
Jan. 12	The periodic table	8
Jan. 14	Laboratory #1: Density Group 2	
Jan. 15	**Quiz 1;** Nomenclature: naming compounds	2
Jan. 19	Chemical reactions	3
Jan. 21	Laboratory #2: Stoichiometry Group 1	
Jan. 22	Stoichiometry	3
Jan. 26	Thermochemistry	12
Jan. 28	Laboratory #2: Stoichiometry Group 2	
Jan. 29	**Quiz 2;** Thermochemistry	12
Feb. 2	Atomic structure	5
Feb. 4	Laboratory #3: Spectroscopic determination of nickel. Group 1	
Feb. 5	Atomic structure	5
Feb. 9	Atomic structure	5
Feb. 11	Laboratory #3: Spectroscopic determination of nickel. Group 2	
Feb. 12	**Midterm**	
Feb. 16	Molecular structure	6
Feb. 18	Laboratory #6: Thermochemistry Group 1	
Feb. 19	Molecular structure, bond polarity	6
Feb. 23	Molecular shape	7
Feb. 25	Laboratory #6: Thermochemistry Group 2	
Feb. 26	Molecular shape, molecular polarity	6,7
Mar. 1	**Quiz 3;** Intermolecular forces	6
Mar. 3	Laboratory #5: VSEPR	

	Group 1	
Mar. 4	Ideal gases	4
Mar. 8	Gases	4
Mar. 10	Laboratory #5: VSEPR Group 2	
Mar. 11	**Quiz 4;** Liquids, vapour pressure, phase diagrams	9
Mar. 15	Liquids, mixtures, and solids	9
Mar. 17	Start Review	
Mar. 18	Review	
Mar. 22-26	Exam period	