CAMOSUN COLLEGE	***School of Arts & Science*** ***CHEMISTRY AND GEOSCIENCE DEPARTMENT*** **CHEM 120-6** **College Chemistry 1** **Fall 2010**

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:	Dr. Tark Hamilton		
(b)	Office Hours:	Mon 1:30-3:00 T 11:30-12:30 W 1:30-3:00 Thur 10:30-12:30		
(c)	Location:	F 344A		
(d)	Phone:	370-3331	Alternative Phone:	
(e)	Email:	hamilta@camosun.bc.ca read Monday - Thursday		
(f)	Website:	https://faculty.camosun.ca/tarkhamilton/ (under construction)		

2. Intended Learning Outcomes

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

1. Utilize nomenclature rules to name ionic and covalent compounds.
2. Demonstrate an understanding of stoichiometry by balancing chemical equations and performing mathematical calculations involving chemical reactions.
3. Describe the electronic structure of any atom in the periodic table and apply it to explain many of the physical and chemical properties of the elements.
4. Utilize simple bonding theories to explain why elements combine to form the compounds they do and also to explain many of the properties of compounds.
5. Apply knowledge of intermolecular interactions to rationalize many important physical properties of bulk matter in the gas, liquid and solid phases.
6. Use standard chemistry lab equipment, including burets, pipets, Buchner filters, and volumetric glassware in the correct manner.
7. Perform many standard laboratory procedures, such as titrations, preparation of standard solutions, the preparation, isolation, and purification of compounds, as well as use spectrophotometers to make analytical measurements.

3. Required Materials

(a) Texts Chemistry: The Central Science, Brown, Lemay, Bursten, Prentice Hall, Australian Edition 2e

(b) Other Chemistry 120 lab manual (in-house)

4. Course Content and Schedule

Lectures: **Mon-Wed F214, Th F200; (3:30 – 4:20 PM)**

Laboratory: **Tuesday: 2:30 am -5:20 pm F354**

Chem120 Laboratory Schedule: (Fall 2008)

(Lab and Exam schedule subject to change. Attend classes for updates.)

Period	Experiment	Marks
Week of Sept 6	Lab orientation	10
Week of Sept 13	Expt 2: Density of solids and liquids	20
Week of Sept 20	Expt 3 Stoichiometry Group A	20
Week of Sept 27	*Expt 3 Stoichiometry Group B	20
*Combine Stoichiometry labs and put Midterm 1 in Week 4 if possible		
Week of Oct 4	Expt 4 Spectroscopy of Nickel	20
Week of Oct 11	Midterm Test 1 in Lab	Term test
Week of Oct 18	Expt 5 Colorimetry of Iron	20
Week of Oct 25	Expt 6 Determination of Copper	20
*Put Midterm 2 in Week 8 if possible		
Week of Nov 1	Expt 7 Determination of water hardness	20
Week of Nov 8	Expt 8 Molecular shapes and VSEPR	20
Week of Nov 15	Midterm Test 2 in Lab or Lab 9	Term test
Week of Nov 22	Expt 9 Preparation of Iron salt	20
Week of Nov 29	Expt 10 Analysis of Iron salt (joint report)	20
Student Evaluation	preparation/safety/cleanliness	20
		210 total

- Final exam at the end of the course will cover **all** course material.

Do not make travel arrangements for the final exam period. Only medical excuses will be allowed.

- At least a passing grade on lab marks must be achieved in order to write the final exam.
- You must pass both the lecture portion and the lab portion in order to pass the course.
- You must provide your own **safety glasses**. Prescription safety glasses are OK, but sunglasses are NOT. You must wear these safety glasses at all times while you are in the lab. You will not be allowed to carry out experiments without safety glasses. Contact lenses must not be worn in lab!
- Lab reports are due one week after the completion of the experiment (at the beginning of next lab period). Late labs will be given a 10% deduction for each day. No late labs are graded after the seventh day. Experiment 9 & !0 is a double report graded on content, yield and purity of salt.
- Lab grade consists of 9 labs, lab orientation, and student evaluation for preparation, safety, and cleanliness. Lab orientation is required prior to doing 1st lab 2.
- Students are expected to come to lab on time – late arrivals will be penalized. Prelab readings and assignments are due as you walk in the lab door. Without them you cannot do the lab.
- All lab reports must be printed, stapled with signed data sheets. Your lab data must be approved and signed off by the instructor before you can leave the lab.

5. Basis of Student Assessment (Weighting)

(a) Assignments: end-of-chapter questions. CD-ROM exercises. Assigned but not marked.

(b) Mid-Term test 1 (2 hours) in lab: 15% Fri Oct 12, 2010 (2:30 PM Fisher 354)
Mid-Term test 2 (2 hours) in lab: 20% Fri Nov 16, 2010 (2:30 PM Fisher 354)

(c) Exams: Comprehensive Final: 40%

(d) I have a 1 test mark improvement policy. I will replace 1 earlier lower test mark by a later higher test mark up to 1 time, at the end of term, to your best advantage.

(d) Laboratory reports (write ups, theory, data, calculations and interpretation): 25%

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** for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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	*In progress*: 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 3rd course attempt or at the point of course completion.)*
CW	*Compulsory Withdrawal:* 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.

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.

No eating or drinking in Chem Labs at any time!

Course content

Review: For chapters 1 to 3 and 9, **not all** the topics below will be covered in class. Students are responsible for the reviewing the remainder of the these chapters independently; they contain material covered in Chemistry 11 and 12 or Camosun's Chem 060 and 080 /110

Chapters 1,2 &3

- *Why do we study chemistry?*
- *Classification of matter*
- *Units of measurement*
- *The atomic theory of matter*
- *Atomic structure*
- *Isotopes, atomic numbers and mass numbers*
- *The periodic table*
- *Molecules and molecular compounds*
- *Ions and ionic compounds*
- *Patterns of chemical reactivity*
- *The mole*
- *Empirical formulas and combustion analysis*
- *Stoichiometry, limiting reagents, excess reagent*
- *Concentrations of solutions*

Chapter 9 Gases

9-1 Characteristics of gases
9-2 Pressure
9-3 The gas laws
9-4 The ideal gas equation
9-5 Application of the ideal gas equation
9-6 Gas mixtures and partial pressures
9-7 Kinetic theory of gases
9-8 Effusion and diffusion

Atomic structure:

Chapter 5

5-1 The wave nature of light
5-2 Quantized energy and photons
5-3 Bohr's model of the atom
5-4 The wave behavior of matter
5-5 Quantum mechanics and atomic orbitals
5-6 Orbital shapes
5-7 The many-electron atom
5-8 Electronic configurations
5-9 The periodic table

Periodic properties:

Chapter 6

6-2 Atomic sizes
6-3 Ionization energy
6-4 Electron affinities
6-5 Metals, non-metals and metalloids
6-6 Group trends for groups 1 and 2
6-7 Group trends for non metal groups

Bonding:

Chapter 7

7-1 Chemical bonds, symbols and the octet rule
7-2 Ionic bonding
7-3 Sizes of the ions
7-4 Covalent bonding
7-5 Bond polarity and electronegativity
7-6 Drawing Lewis structures
7-7 Resonance structures
7-8 Exceptions to the octet rule

Chapter 8

8-1 Molecular shapes
8-2 The V.S.E.P.R. model
8-3 Polarity of polyatomic molecules
8-4 covalent bonding and orbital overlap
8-5 Hybrid orbitals
8-6 Multiple bonds

Chapter 10

10-2 Intermolecular forces of attraction
10-1 A molecular comparison between liquids and solids
9-9 Real gases and deviations from ideal behavior
10-3 Properties of liquids
10-4 Phase changes
10-5 Vapour pressure
10-6 Phase diagrams The solution process
12-2 Solubility
12-3 Changes in solubility
12-4 Different ways 10-8 Bonding in solids

Chapter 16 (the environment) This is worked in throughout lectures as well.

16-1 The earth's atmosphere
16-2 Sunlight and photochemistry
16-3 The ozone layer
16-4 Chemistry of the troposphere
16-5 The oceans
16-6 Fresh water