CAMOSUN COLLEGE	***School of Arts & Science*** ***CHEMISTRY AND GEOSCIENCE DEPARTMENT*** **CHEM 100-04** **Introduction to Chemistry** **2012F**

COURSE OUTLINE

⌖ *Please note: this outline will be electronically stored for five (5) years only.*
It is strongly recommended students keep this outline for your records.

This course is a basic introduction to chemistry and is intended for students with little or no background in chemistry. Topics include: chemical formulae and equations, simplest formula, atomic mass, mole concept, molarity, periodic table, molecules and chemical bonding, and some descriptive chemistry. Experiments will emphasize basic lab techniques.

Prerequisite: Principles of Math 10, or Foundations of Math & Pre-calculus 10, or MATH 053, or MATH 057; **or** assessment

1. Instructor Information

(a)	Instructor (lecture & lab):	Blair Surridge		
(b)	Office Hours:	Thurs: 10:30 – 12:20 Mon, Wed, & Fri: 11:30-12:20		
(c)	Location:	F350A		
(d)	Phone:	370-3438	Alternative Phone:	
(e)	Email:	SurridgeB@camosun.bc.ca		

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:

At the end of this course, students will be able to:

- Utilize the specialized vocabulary and nomenclature of chemistry.
- Use metric and SI units in performing chemical calculations.
- Describe the experimental discovery of subatomic particles, summarize the characteristics of electrons, protons and neutrons, and identify their roles as components of atoms.
- Communicate an understanding of atomic structure, the differences between elements, and the role of the periodic table in organizing elements within a coherent theoretical and empirical system.
- Describe and account for the periodic table trends concerning atomic number, atomic radius, ionization energy and electronegativity.
- Demonstrate an ability to name chemical compounds, and identify and construct chemical formulas.

- Compare the formation and characteristics of ionic and molecular compounds.
- Demonstrate an ability to perform mathematical calculations involving chemical formulas, molecular weights, moles, Avogadro's number and molarity.
- Balance chemical equations, demonstrate an understanding of the information they provide chemists and solve stoichiometry problems.
- Identify and account for the general characteristics of the gas state and solve mathematical problems involving Boyle's Law, Charles' Law, Gay-Lussac's Law and Avogadro's Law.
- Communicate an understanding of radioisotopes, nuclear fission and nuclear fusion.

3. Required Materials

(a)	Text	*Chemistry 100 Course Notes, Lab Manual, and Problem Sets*, 2011 Edition. Camosun College Publications.
(b)	Safety Glasses ***(Mandatory)***	Book store has "Uvex" safety eyewear – please check if using others
(c)	Lab coat ***(Recommended)***	Bookstore has cloth coats available – please check if using another type

4. Course Content and Schedule (news items & supplemental learning material can be found on D2L)

Lectures Times and Locations:

Mon,Thur,& Fri	9:30 to 10:20 pm in Fisher Building, F214
Wed	9:30 to 10:20 pm in Fisher Building, F216
Tues (Laboratory)	8:30 to 10:20 pm in Fisher Building, F300

Lecture Outline

A detailed outline of the lecture material is provided in the Table of Contents of *Chemistry 100 Notes*. Notably, this book has been designed specifically for this course to present many relevant examples of the chemistry of life and the environment including those intended primarily to stimulate interest and curiosity. Following is a brief outline of each chapter.

1. **Measurements and Calculations:** SI & other scientific units; SI prefixes; metric conversions; measurements, scientific notation, & significant figures; density calculations; calculations involving energy changes.

2. **Introductory Terminology:** scientific method; physical & chemical changes; elements, compounds and mixtures; metals and nonmetals; atoms and molecules; protons, neutrons and electrons; ions and isotopes; atomic masses.

3. Chemical Formulas and Names: composition of chemical compounds; formulas and naming of molecular compounds; meaning of ionic formulas and naming of ionic compounds; compounds containing polyatomic ions; formulas and names of acids.

4. Calculations Based Upon Formulas: molecular mass; formula mass; percentage composition; the mole; grams to moles and moles to grams conversions; moles of molecular of ionic compounds; Avogadro's Number.

5. Stoichiometry: balancing chemical equations; stoichiometry - problems based upon chemical equations; limiting reactant calculations; percentage yield calculations; calculations involving exothermic or endothermic chemical reactions.

6. Periodic Table and Electron Distributions: chemical families; electron levels and orbitals (sublevels); electron distribution in atoms; electron dot formulae; trends in atomic radii (size), ionization energies & chemical reactivity.

7. Chemical Bonding: formation of ionic compounds; formation of molecular compounds; electron dot formula representations; electronegativity and bond polarity; molecular geometry and polarity.

8. Gases: general nature of gases; factors affecting gas volume; Boyle's Law - gas pressure & volume; absolute temperature scale; Charles' Law - gas temperature & volume; STP standard conditions of gas temperature and pressure ; molar gas volume; partial pressures of gases; gases and diving; gas stoichiometry.

9. Liquids and Solutions: general properties of liquids; hydrogen bonding; vapour pressure and boiling point; solubility; solution concentration & diluting solutions; electrolytes, dissociation equations & ion concentrations in solution; pH scale; solution stoichiometry.

10. Organic Chemistry: why so many organic compounds?; structural formulas and isomers; naming of hydrocarbons & alcohols; optional: addition and substitution reactions in organic chemistry.

11. Radioactivity: Radioactive substances; alpha, beta & gamma rays & associated decay; optional: production of radioisotopes; half-life and dating; medical applications.

Chem. 100-004 Lab Experiment Schedule, Tuesday 8:30-10:20 in F300

Week	Lab Date	Experiment
I	Sept 4th	Lab Orientation and Safety **(Mandatory)**
II	Sept 11th	Exp # 1, Density
III	Sept 18th	Exp #3, Separating Mixtures
IV	Sept 25th	Exp # 4, Heat of Combustion
V	Oct 2nd	Exp # 5, Recycling Copper
VI	Oct 9th	Exp # 7, Copper and Silver Nitrate Reaction
VII	Oct 16th	**Tutorial and review**
VIII	Oct 23rd	**Midterm (2.0 hrs)**
IX	Oct 30th	Exp # 9, Chemical Reactivity
X	Nov 6th	Exp # 11, Magnesium and Hydrochloric Acid

		Reaction
XI	Nov 13th	**Tutorial and review**
XII	Nov 20th	Exp # 13, Synthesis of Aspirin
XIII	Nov 27th	Exp # 14, Preparation of Some Common Substances
XIV	Dec 4th	**Review for Final Exam**

Note: schedule is tentative and will be confirmed by your lab instructor in week I

5. Basis of Student Assessment (Weighting)

Labs	20%*
Quizzes	25% (in class - the top 6 of 7) **
Midterm Test (Units 1 to 5)	20% (Week VIII Lab Period, 2.0 hours)*
Final Exam (comprehensive)	35% (TBA ~Week XV, 3 hours in December)

* To be confirmed during the first week of classes in September.
**Tentatively seven quizzes scheduled. One quiz will be dropped. You will receive at least 4 days of notice before a quiz and details will be posted on D2L!!

Important Notes:

(1) Students must pass both the lab portion and the lecture portion of the course to obtain credit for Chem 100. All labs are to be attended and individual lab reports completed. Lab instructor will provide further assessment information during the week 1 lab orientation session.
(2) At the discretion of the instructor, a student who is repeating this chemistry course may apply for lab credit.
(3) A midterm score which is not as high as that of the Dec final will be dropped automatically and its weight redistributed to the Dec final. In the event the midterm is missed due to illness/other the weight of the midterm will be carried over to the final exam. For example, if the midterm is missed your final exam will count for 55% of the course grade!
(4) No one is allowed to write late and there will be no exceptions. Early exam is a privilege and not a right; thus, at full 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** 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. Important Dates

Week
III Sept. 18: Fee deadline
VI Oct.8: Thanksgiving Monday-College Closed
XI Nov. 11 (Sunday): Remembrance Day
XIV Exam Period for Winter 2012 begins

Use this link to check out scholarships and bursaries
http://camosun.ca/learn/calendar/current/pdf/financial-assistance.pdf

8. 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.

Please Note:

Students may not use recording devices in the classroom without the prior permission of the instructor. However, the instructor's permission is not required when the use of a recording device is sanctioned by the College's Resource Centre for Students with Disabilities in order to accommodate a student's disability and when the instructor has been provided with an instructor notification letter which specifies the use of a recording device. Recordings made in the classroom are for the student's personal use only, and distribution of recorded material is prohibited. Cell phones should be turned off will in class.