

CAMOSUN COLLEGE
DEPARTMENT OF CHEMISTRY AND GEOSCIENCE
Chemistry 121-005, College Chemistry II
Course Outline Winter 2012

A. General Information

Instructor: Steve McKinnon

Office - Fisher 348A. Telephone: 370-3446 Email: mckinnons@camuson.bc.ca

Lectures: Wednesday (F 214): 6:30 am – 9:20 pm

Lab: Monday (F 356): 6:30 pm – 9:20 pm

Office Hours: TBA

Important Dates: January 23rd: Fee deadline, February 16th & 17th: Reading Break/Connections Day (College closed). March 13th: Last day to withdraw without a failing grade. April 16th - 21st and April 23rd and 24th Exam period.

B. Required Materials for the Course

Principal (Only) Text suitable for this course: CHEMISTRY, The Central Science: a Broad Perspective, by Brown, Lemay, Bursten, Langford, Sagatys, and Duffy. Prentice Hall. Australian edition 2nd edition (blue).

The 1st edition (purple/green) is acceptable along with the 10th and 11th US editions.

Lab Experiments: Chemistry 121 Laboratory Manual, Fall 2007 Edition (From the bookstore)

C. Course Content and Schedule

The course includes:

- a) Four in-class quizzes.
- b) 2 hour written midterm
- c) A 3 hour written final examination at the end of the course on all the material in the course.

Notes

1. There are recommended questions found after each chapter. These problem sets will not be marked but solutions to the red questions may be found at the end of the textbook or the accompanying CD. Answers to any of the questions in black may be given on request.

2. Quizzes will be on material covered in the classes prior to quiz. Though the quizzes are not cumulative, most topics will require that the student knows and understands material from earlier in the course.

D. Summary of Lecture Material with Chapter References

Subject	Material Covered	Classes (approximate)	Textbook chapters*
Organic Chemistry	Alkane/Alkenes structure and properties, including naming cycloalkanes/ cycloalkenes, reactions and stereochemistry, functional groups and some reactions. Polymers depending on schedule	4	21 to 26. Selected topics.
Chemical Kinetics	Reaction rates, change in concentration with time, temperature and rate, reaction mechanisms and catalysis	2	12
Thermochemistry	Energy, first law of thermodynamics, enthalpy, calorimetry, Hess' Law, enthalpies of formation	1	4
Thermodynamics	Spontaneity, second law of thermodynamics, entropy, Gibbs Free Energy, free energy and temperature, free energy and equilibrium	1	4
Equilibrium	Equilibrium constants, heterogeneous equilibria, working with equilibrium constants	1.5	13
Acids and Bases	Acids and bases, pH scale, K_a and K_b , auto-ionization of water, acid strength of ions	1.5	14
Aqueous equilibria	Titrations, common ion effect, buffers, solubility equilibrium	1	15
Electrochemistry	Redox reactions, balancing redox equations, half cells and the Nernst equation	1	3, 16

*textbook chapters are from Brown, LeMay, Bursten; 2nd Australian edition

E. Basis of Student Assessment (Weighting)

The course mark will be derived in the following manner:

Quizzes (4 @ 5% each)	20 %
Midterm	20 %
Final	35 %
Laboratory work	25 %

In the event of a quiz being missed due to illness/other commitments the weight of the missed test will be carried over to the final. There are no make-up dates for quizzes.

F. The Laboratory Mark

Detailed information will be presented at the first laboratory class. Students must pass BOTH the laboratory section and the lecture section of the course to obtain a passing grade.

No more than 2 laboratory classes may be missed, during the course. In the event of a student being unable to attend a laboratory class it is advised that the student attempt to obtain data from a partner for partial credit or perform the lab with another section.

The lab mark is based on attendance and the laboratory report. A student that attends the laboratory class but does not present a written report will receive a score of 25%.

Students are responsible for obtaining their own safety glasses and laboratory jacket from the bookstore.

G. The Grading System

The following scale is used by Camosun College:

>90 A+ 77-79 B+ 65-69 C+ 50-59 D 0-49 F

85-89 A 73-76 B 60-64 C

80-84 A- 70-72 B-

H. 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 stereoisomers 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 and why reactions attain equilibrium positions and perform calculations pertaining to equilibrium systems.
7. Describe redox reactions, use electrochemical data to predict the spontaneity of redox reactions, and comprehend the structures of electrochemical cells.
8. Describe various acid-base theories and apply these theories to acid-base reactions in aqueous solution.
9. Perform experiments in the areas of preparative organic, preparative inorganic, physical and analytical chemistry and use the various associated pieces of laboratory equipment.

I. 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, Registrar=s Office or the College web site at <http://www.camosun.bc.ca>

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy. It is the student=s responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-8

**Steve McKinnon Winter 2012 Lab Schedule:
Chem 121 (005) – Mondays, 6:30-9:20 pm in Fisher 356**

Week Number Begins on	Activity & Experiment Number	Actual Date of Lab Monday
I Jan 9th	Review & Lab Orientation - attendance mandatory	Jan 9th
II Jan 16th	Expt. 1 Preparation of Xylene Sulfonic acid	Jan 16th
III Jan 23rd	Group A Expt. 3 Preparation of Benzoic acid	Jan 23rd
IV Jan 30th	Group B Expt. 3 Preparation of Benzoic acid	Jan 30th
V Feb 6th	Expt. 2 Analysis of an unknown acid	Feb 6th
VI Feb 13th		Feb 13th
VII Feb 20th	Expt. 6 The rate of bromination of acetone	Feb 20th
VIII Feb 27th		Feb 27th
IX Mar 5th	Expt 10 Thermochemistry	Mar 5th
X Mar 12th		Mar 12th
XI Mar 19th	Expt. 4 Banana Oil	Mar 19th
XII Mar 26th	Expt. 8 Gravimetric analysis of chloride	Mar 26th
XIII Apr 2nd	Expt. 9 Synthesis of copper(I) chloride, subject to scheduling	Apr 2nd
XIV Apr 9th	Easter Monday – No Lab	Apr 9th
Final Exam Period	Final Exams Apr 16th - 21st, 23rd, and 24th	

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!!

***Lab information will be given in the first class**