

CAMOSUN COLLEGE
DEPARTMENT OF CHEMISTRY AND GEOSCIENCE
Chemistry 121-03, College Chemistry II
Course Outline Winter 2010

A. General Information

Instructor: John Lee

Office - Fisher 348A. Telephone: please email

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Lectures: Thurs (F212), 6.30 pm – 9.20 pm

Lab: Tues (F 356): 6.30 pm – 9.20 pm

Office Hours: TBA

Important Dates: January 20th: Fee Deadline. February 18th 19th Reading Break (College closed). March 10th: Last day to withdraw without a failing grade. April 10th: Last Day of Instruction

B. Required Materials for the Course

Principal Text: CHEMISTRY, The Central Science: a Broad Perspective, by Brown, Lemay, Bursten, Langford, Sagatys, and Duffy. Prentice Hall. Australian edition

Lab Experiments: Chemistry 121 Laboratory Manual, Fall 2007 Edn (In-house)

C. Course Content and Schedule

The course includes:

- a) 6 in class review quizzes, each 10 multiple choice questions
- b) One 90-minute written midterm test
- c) A 3 hour written final examination covering all the material 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 simple cycloalkanes/ cycloalkenes, reactions and stereochemistry, functional groups and some reactions. Polymers depending on schedule	3	21, 22 and 23
Chemical Kinetics	Reaction rates, change in concentration with time, temperature and rate, reaction mechanisms and catalysis	3	12
Thermochemistry	Energy, first law of thermodynamics, enthalpy, calorimetry, Hess' Law, enthalpies of formation	2	4
Thermodynamics	Spontaneity, second law of thermodynamics, entropy, Gibbs Free Energy, free energy and temperature, free energy and equilibrium	2	17
Equilibrium	Equilibrium constants, heterogeneous equilibria, working with equilibrium constants	2	13
Acids and Bases	Acids and bases, pH scale, K_a and K_b , auto-ionization of water, acid strength of ions	2	14
Aqueous equilibria	Titration, common ion effect, buffers, solubility equilibrium	1	15
Electrochemistry	Redox reactions, balancing redox equations, half cells and the Nernst equation	1	19

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. Answers to any of the questions in black may be given on request

2. The midterm test will be on material covered in the half of the course. It will take place during the lab period of week

3. The in class quizzes will be on material covered in the previous 2 weeks. They will be given at the start of class, answers will be given after the quiz.

4. At least 3 of the 14 evenings designated for Lab classes will be used for additional lectures or reviews. Sufficient notice will be given

E. Basis of Student Assessment (Weighting)

The course mark will be derived in the following manner:

6 Quizzes	(2% each) = 12 %
1 Midterm test	18 %
Final	37 %
Laboratory work	33 %

If it is advantageous to the student the theory mark will be solely derived from the final examination, or the combination of midterm and final.

In the event of a quiz or midterm test being missed due to illness/other, the weight of the missed quiz/test will be carried over to the midterm or final depending on which grade is higher. There are no make-up dates for quizzes or midterm.

F. The Laboratory Mark

Detailed information will be presented at the first laboratory meeting.

G. The Grading System

The following scale is used:

>90 A+ 85-89 A 80-84 A- 77-79 B+ 73-76 B 65-69 C+ 60-64 C 50-59 D 0-49 F

- 1. You must score a minimum of 50 % on laboratory work to be permitted to take the final exam**
- 2. You must pass both the lecture portion and the laboratory portion in order to pass the course.**

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.

John Lee Winter 2010 Lab Schedule:

Chem 121 (003) – Tuesdays, 6:30-9:20 pm in Fisher 356

Week Number Begins on	Activity & Experiment Number	Actual Date of Lab Tuesdays
I Jan 4th		Jan 6 th *
II Jan 11th	Review & Lab Orientation Expt. 2 Preparation of Xylene Sulfonic acid	Jan 12th
III Jan 18th	Group A Expt. 4 Preparation of Benzoic acid	Jan 19th
IV Jan 25th	Group B Expt. 4 Preparation of Benzoic acid	Jan 26th
V Feb 1st	Expt. 3 Analysis of an unknown acid	Feb 2rd
VI Feb 8th	class	Feb 9th
VII Feb 15th	[Expt. 6 The rate of bromination of acetone]	Feb 16th
VIII Feb 22nd	Midterm test	Feb 25th
IX Mar 1st	class	Mar 3rd
X Mar 8th	Expt 10 Thermochemistry	Mar 10th
XI Mar 15th	Expt. 8 Gravimetric analysis of chloride	Mar 17 th
XII Mar 22nd	Expt. 9 Synthesis of copper(I) chloride, subject to scheduling	Mar 24 th
XIII Mar 29th	class	Apr 1 st
XIV Apr 5th	Material review	Apr 8 th
Final Exam Period	Final Exams Apr 12 th to Apr 17 th ,	

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

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