

	<p>SCHOOL OF ARTS & SCIENCE CHEMISTRY AND GEOSCIENCE DEPARTMENT</p> <p>CHEM 121-002</p> <p>2013 Winter</p>
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A. General Information

Instructor: John Lee

Office - Fisher 344A, Phone: local 3446, twitter: *johnatcamosun*, via D2L: *john.lee16@online.camosun.ca*

E-mail: leejohn@camosun.bc.ca

Email is my preferred method of communication, rather than phone. Any problems with course material/questions should be addressed in person. All material required for this course (other than the textbook) is available on D2L.

Lectures: Monday, Friday, (F 310) 9.30 am – 10.20 am, Wednesday (F 212), 9.30 am – 10.20 am

Lab: Thursday (F 356): 9.30 am – 12.20 pm

Office Hours: Monday, Wednesday, Friday 10.30 to 11.30 am, Monday 1.20 pm to 3.20 pm any other times by apt.

Important Dates: <http://camosun.ca/learn/calendar/current/pdf/important-dates.pdf>

January 21st Fee deadline, February 11th Family Day (College closed), February 21st & 22nd : Reading Break/Connections Day (College closed). March 12th: Last day to withdraw without a failing grade.; Good Friday March 29th, (College closed); Easter Monday, April 1st (College closed). April 15th - 20th and April 22nd -23rd 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 if you already have a copy.

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

C. Course Content and Schedule

The course includes:

a) 4 in-class review quizzes. (January 23rd, February 13th, March 13th, April 3rd)

b) One 2 hour written midterm test. (February 28th)

c) A 3 hour written final examination covering all the material in the course.

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

3. The in class quizzes will be on material covered in the previous 2 weeks. They will be given at the start of class and will require 30-45 minutes. Answers will be given after the quiz.

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.	9	21 to 26. Selected topics.
Chemical Kinetics	Reaction rates, change in concentration with time, temperature and rate, reaction mechanisms and catalysis	5	12
Thermochemistry	Energy, first law of thermodynamics, enthalpy, calorimetry, Hess' Law, enthalpies of formation	3	4
Thermodynamics	Spontaneity, second law of thermodynamics, entropy, Gibbs Free Energy, free energy and temperature, free energy and equilibrium	3	4
Equilibrium	Equilibrium constants, heterogeneous equilibria, working with equilibrium constants	4	13
Acids and Bases	Acids and bases, pH scale, K_a and K_b , auto-ionization of water, acid strength of ions	5	14

Aqueous equilibria	Titration, common ion effect, buffers, solubility equilibrium	3	15
Electrochemistry	Redox reactions, balancing redox equations, half cells and the Nernst equation	3	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:

4 Quizzes	(3% each) = 12 %
1 Midterm test	15 %
Homework Assignments	(4% each) = 16 %
Final	32 %
Laboratory work	25 %

If it is advantageous to the student the theory mark will be solely derived from the final examination, or a combination of midterm/quizzes with the final. **Missed Homework Assignment marks may not be carried over to the final exam.**

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

F. The Laboratory Mark

The Laboratory mark breakdown is as follows:

Arriving punctually, prepared to do a lab, familiar with the procedure and having the correct safety gear . Leaving your workspace clean and tidy, Ability to work competently and confidently with good attitude.	15 %
Pre-lab assignments (completed prior to starting the lab class).	20 %
Quality of Lab Reports	65 %

No more than 2 laboratory classes may be missed, during the course unless there are extenuating circumstances. If no reason for missing a lab is supplied the student will receive a mark of zero for this lab class. 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 or perform the class with another section.

As indicated in the table above, a student that attends the laboratory classes but does not present a written report will receive a maximum score of 40%. **Students must pass the Laboratory section and written section with a 50 % minimum score.**

Students are responsible for obtaining their own safety glasses and laboratory jacket. It is not the

responsibility of the College to provide Safety Glasses.

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

John Lee Winter 2013 Lab Schedule:
Chem 121 (002) - Thursdays, 9:30 am-12:20 pm in Fisher 356

Week Number Begins on	Activity & Experiment Number	Actual Date of Lab Thursday
I Jan 7 th	Review & Lab Orientation— attendance mandatory	Jan 10 th
II Jan 14 th	Expt. 1 Preparation of Xylene Sulfonic acid	Jan 17 th
III Jan 21 st	Group A Expt. 3 Preparation of Benzoic acid	Jan 24 th
IV Jan 28 th	Group B Expt. 3 Preparation of Benzoic acid	Jan 31 st
V Feb 4 th	Expt. 2 Analysis of an unknown acid	Feb 7 th
VI Feb 11 th	Expt. 6 The rate of bromination of acetone	Feb 14 th
VII Feb 18 th	[College closed]	Feb 21 st
VIII Feb 25 th	Midterm Test	Feb 28 th
IX Mar 4 th	Expt 10 Thermochemistry	Mar 7 th
X Mar 11 th	Class in place of lab	Mar 14 th
XI Mar 18 th	Expt 4 Banana Oil or Soap making, subject to resources	Mar 21 st
XII Mar 25 th	Expt. 8 Gravimetric analysis of chloride	Mar 28 th
XIII Apr 1 st	Expt. 9 Synthesis of copper(I) chloride, subject to scheduling	Apr 4 th
XIV Apr 8 th	Material Review	Apr 11 th
Final Exam Period	Final Exams Apr 15 th to Apr 20 st and Apr 22 nd to Apr 23 rd	

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**