Lakehead
UNIVERSITY

DEPARTMENT OF CHEMISTRY

Chemistry 1110: Modern Chemistry I

Course Outline, Fall 2013

Contact Information

Instructor: C. D. MacKinnon
Phone: 343-8327
E-mail: craig.mackinnon@lakeheadu.ca
Office: CB-4038 (research lab: CB-2030)
Office hours: M-Th 3:30 - 4:30 pm
Website: www.chemistry.lakeheadu.ca
(or by appointment)

Lab Instructor: Brad Miller (CB-2043, 343-8233, bmiller@lakeheadu.ca)

Lectures: M, W, F 12:30-1:30 pm. **Location**: AT-1003

Layout: Each lecture will be part lecture/part tutorial. Students will be expected to do a reading *before each class*. Students may wish to bring their text to class.

Prerequisite: Chemistry 12U (or equivalent)

Course Overview: This course provides an introduction to the nature of matter and the fundamental laws of chemistry. Problem solving is emphasized, both quantitative (numerical) and qualitative (descriptive) aspects.

Texts - BOTH are *required* for the course.

1. Chemistry, 9th Edition. S.S. Zumdahl and S.A. Zumdahl, Houghton Mifflin Company. You may purchase a paper book or an electronic version (packaged with code-key for assignments); this edition is new this year, used 8th edition books will have similar content, but the old edition will not be officially supported.
2. Chemistry 1110 Laboratory Manual, Department of Chemistry, Lakehead University, Fall 2013 version.

Online Assignments Students will be required to purchase a textbook published code-key for the online homework. Assignments (worth 10% of the final mark) are performed and submitted online. The code-key is packaged with new texts (print or electronic) purchased in the bookstore.

Laboratories The laboratory is an integral part of the CHEM1110 course. Students who fail to complete the laboratory program will be not be considered to have completed the course. **Location**: CB 2044. **Schedule**: see attached. Labs start on Sept. 10.

Laboratory exemptions may be available for those who have previously taken 1110. Apply for an exemption during the first week (in class) to determine eligibility.

Policy on Electronic Communication Equipment
Students attending class are expected to follow the *Code of Student Behavior*, and refrain from activities that distract their fellow students. This includes the use of electronic communication equipment (cell phones, Blackberries, etc.). Laptops, tablets, etc. may be used to take notes (not for games!). NO ELECTRONIC COMMUNICATION EQUIPMENT WHATSOEVER IS ALLOWED DURING TESTS/EXAMS (calculators are allowed).

Policy on Plagiarism
Plagiarism is a serious academic offense. In order to prevent misunderstandings about what constitutes plagiarism, the Department of Chemistry has prepared a document that clearly defines plagiarism, gives several examples and lists possible penalties. Students will have to sign a Plagiarism Certification that verifies that they have read and understood the consequences of plagiarism as discussed in the *Code of Student Behaviour and Disciplinary Procedures* and the *Chemistry Department Policy on Plagiarism and Academic Integrity*. There is a copy of the certificate in your lab manual.

Marking Scheme	30%	two term tests (1st is 10%, 2nd is 20%)
	40%	final exam (scheduled by registrar)
	20%	laboratory (Expts 1, 2, 3, 5 worth $^1/_6{}^{th}$ each, expt 4 worth $^2/_6{}^{th}$)
	10%	online quizzes

Course Outline Chapters are from Zumdahl and Zumdahl, 9th Edition.

1.	Intro/Review	*Chapters 1-4*. Students should be familiar with this material from their high school chemistry courses. (4 classes)
2.	Gasses	*Chapter 5*. Gas laws, kinetic molecular theory. (3 classes)
3.	Atomic Structure	*Chapters 7, 19*. Light, quantum structure of the atom, periodicity, structure of the nucleus, nuclear fission and fusion. (5 classes)
4.	Chemical Bonds	*Chapter 8, 9.1*. Ionic bonds, molecular geometry, valence bond theory. (3 classes)
5.	Inorganic Chemistry	*Chapter 21*. Coordination bonding and absorption spectroscopy. (2 classes)
6.	Organic Chemistry	*Chapters 9.2, 22*. Hydrocarbons, functional groups, nomenclature, molecular orbital bonding theory. (7 classes)
7.	Liquids and Solids	*Chapter 10*. Structure of liquids, structure of solids. (3 classes)
8.	Biochemistry	*Chapter 22*. Biological molecules, bioinorganic chemistry. (3 classes)
9.	Thermochemistry	*Chapter 6*. Calorimetry, enthalpy, Hess's Law, bond enthalpies. (3 classes)

Course Website The course website (www.chemistry.lakeheadu.ca/mackinnon/1110.html) contains class-by-class topics, readings, and exercises from the text, links to the Plagiarism Certification and Policy, previous years' exams, etc.

Important Dates

Midterm 1	Wednesday, 3 October (material on Chapters 1-5) 10%
Midterm 2	Wednesday, 1 November (material to the end of class #20 "cumulative") 20%
Exam	Scheduled by registrar (on all course material) 40%

Laboratory Schedule

BUY THE CORRECT LAB MANUAL!!
(there are two different types – one for sections F1-F9, another for section F10)

Tuesday 8:30 **F10**	Tuesday 11:30 **F3**, **F8**	Thursday 8:30 **F1**, **F6**	Thursday 11:30 **F2**, **F7**	Thursday 2:30 **F4**, **F9**
Sept. 10 10:00 checkin	*Sept. 10* **F3** 11:30 checkin **F8** 1:00 checkin	*Sept. 12* **F1** 8:30 checkin **F6** 10:00 checkin	*Sept. 12* **F2** 11:30 checkin **F7** 1:00 checkin	*Sept. 12* **F4** 2:30 checkin **F9** 4:00 checkin
Sept. 17 lab 1	*Sept. 17* **F3** lab 1	*Sept. 19* **F1** lab 1	*Sept. 19* **F2** lab 1	*Sept. 19* **F4** lab 1
Sept. 24 ------	*Sept. 24* **F8** lab 1	*Sept. 26* **F6** lab 1	*Sept. 26* **F7** lab 1	*Sept. 26* **F9** lab 1
Oct. 1 lab 2	*Oct. 1* **F3** lab 2	*Oct. 3* **F1** lab 2	*Oct. 3* **F2** lab 2	*Oct. 3* **F4** lab 2
Oct. 8 ------	*Oct. 8* **F8** lab 2	*Oct. 10* **F6** lab 2	*Oct. 10* **F7** lab 2	*Oct. 10* **F9** lab 2
Oct. 15 lab 3, part I	*Oct. 15* **F3** lab 3	*Oct. 17* **F1** lab 3	*Oct. 17* **F2** lab 3	*Oct. 17* **F4** lab 3
Oct. 22 lab 3, part II	*Oct. 22* **F8** lab 3	*Oct. 24* **F6** lab 3	*Oct. 24* **F7** lab 3	*Oct. 24* **F9** lab 3
Oct. 29 lab 4	*Oct. 29* **F3** lab 4	*Oct. 31* **F1** lab 4	*Oct. 31* **F2** lab 4	*Oct. 31* **F4** lab 4
Nov. 5 ------	*Nov. 5* **F8** lab 4	*Nov. 7* **F6** lab 4	*Nov. 7* **F7** lab 4	*Nov. 7* **F9** lab 4
Nov. 12 lab 5, part I	*Nov. 12* **F3** lab 5 & checkout	*Nov. 14* **F1** lab 5 & checkout	*Nov. 14* **F2** lab 5 & checkout	*Nov. 14* **F4** lab 5 & checkout
Nov. 19 lab 5, part II & checkout	*Nov. 19* **F8** lab 5 & checkout	*Nov. 21* **F6** lab 5 & checkout	*Nov. 21* **F7** lab 5 & checkout	*Nov. 21* **F9** lab 5 & checkout

Reports are due one week after the experiment was performed (by 4:00 pm)**.** Deposit the report in the appropriate slot in the cabinet outside of CB-2044. Late reports up to 24 hours after the original deadline will receive a -10% penalty; later reports receive a mark of 0. Prelab assignments are handed in at the beginning of the lab period; they will receive a grade of 0 if they are not submitted prior to the start of the pre-lab talk.