Student Course Information
General Chemistry II
CHEM*1050
Winter 2014

Course Calendar Description: F,W, (3-3) [0.50 credit] This course provides an introductory study of the fundamental principles governing chemical transformations: thermodynamics (energy, enthalpy, and entropy); kinetics (the study of rates of reactions); and redox/ electrochemistry. Prerequisite: CHEM*1040

Course Co-ordinator: Prof. Dan THOMAS SCIE 2504 dfthomas@uoguelph.ca

Lecturers	Section	Room	Days	Time
Prof. Lori Jones lojones@uoguelph.ca	1	ROZH 104	Tu Th	1:00 P.M.
Prof. Lori Jones lojones@uoguelph.ca	2	ROZH 104	Tu Th	8:30 A.M.
Dr. Mark Baker mbaker@uoguelph.ca	3	War Mem Hall	M W F	3:30 P.M.

1. Course Materials

(a) **Textbook.** General Chemistry, 10th ed. Ebbing and Gammon, Houghton Mifflin (2013), which you purchased in the bookstore last semester. Earlier editions are also acceptable, though the numbering of end-of-chapter questions may be different. Copies are also available in the Library on Course Reserve.

(b) **Laboratory Manual** for CHEM*1050. Purchased in the Department.

(c) **Safety Goggles** (not safety glasses). Can be purchased in the Department but are available elsewhere, including the Bookstore.

(d) **A lab coat** is required.

(e) **Scientific calculator** with ln, exp or e^x, $\log_{10}$ and 10^x functions. Calculators or notebook computers capable of storing text information are **NOT** allowed in examinations.

(f) **Graphs**. You will be needing to create numerous graphs of your data in both the wet and the dry labs this semester. If you are competent with a spreadsheet graphing program such as Excel or Numbers, you can use them to create your graphs. If you need to create them by hand you will need to purchase graph paper. You can find it at the Bookstore or most other locations. Be sure it is the 10 lines/cm variety so that it has sufficient resolution. In the Bookstore, it is labelled on the shelf as being for our class.

(g) **Homework Access (optional)**. To complete the optional online homework you will need to purchase access to **either** OWL **or** Sapling Learning.

IF YOU:

i. Purchased OWL in the textbook package last semester, then you will already have access. You need only login to your existing OWL account and join our class. The course key you will need to enter is **E-X7FG6WQKPTELX**.

ii. Did not use OWL last semester but want to do so this semester, then you can purchase the textbook package from the Bookstore or directly from Cengage/Nelson's website. However, you will be purchasing two semesters access, but only using one (hopefully!). I doubt this option will be exercised by many students.

iii. Purchased two semesters' access on Sapling Learning, then you already have access to that site. You need only login and join our class.

iv. Only purchased one semester's access to Sapling Learning, and if you want to continue using their site, you will need to purchase another semester's access (www.saplinglearning.ca) and join our class.

v. Do not want to participate in the online homework portion of the course, you will have a different grading scheme (see below) where the weight of these components will be added to the exams.

(h) **An iClicker Student Response Unit** is available from the University Bookstore. Clickers will be used in Sections 01 and 02, but not in section 03. Clickers will not be used for grades, but only for in-class engagement and student feedback. If you have a clicker, please bring it along to class if you are in either of the two sections using them.

2. WET LABORATORY

Begins in Week 1 which starts Monday January 6. Bring your lab manual.

(a) Students attend their wet chemistry labs according to their lab section number. If your lab section is an odd number (e.g. 0113 – Lab section 13) then you follow the Group A Student schedule. If your lab section is an even number e.g. 0226 Lab section 14 then you follow the Group B Student schedule. The schedules are listed later in this document. The laboratory is an integral part of the course and you **must** attend all wet laboratories.

(b) **Laboratory Time and Authorization. Bring "My Class Schedule."**
You must attend your first lab to receive mandatory safety training. This safety lab is a prerequisite for all subsequent labs. As proof that you are registered in a particular lab, you **must** bring a computer printout dated January 1, 2014 or later of "My Class Schedule" from Web Advisor to your first lab.

(c) **Laboratory Quizzes - completed on-line**
Check on the Lab Courselink site for any last minute changes. A pre-lab quiz will be given on Sapling for some of the wet labs. You do not need to purchase access to the Sapling Homework in order to complete the pre-lab quizzes. See the Laboratory Schedule for experiments which have pre-lab quizzes. These quizzes count towards your laboratory grade and will usually be based on the experiment that you are about to perform. Each pre-lab quiz

will open on the Thursday before your particular wet lab and will close on Monday at 7:00 A.M. of the week of your lab. Note that this is different from last semester.

(d) **Laboratory Reports**

Will be submitted electronically as in CHEM*1040. As before, you will complete the lab report online. More information is provided on the CHEM*1050 Wet Labs CourseLink site under "Content". Lab reports are normally due 1 week after your lab by 11:55 P.M. on the day of your normal lab period.

(e) **Missed Wet Laboratory.**

Refer to the Purple Page for Lab Absences in First-Year Chemistry on the CHEM*1050 website.

(f) **Laboratory Exemptions for students who are repeating CHEM*1050.**

DEADLINE: Wednesday, January 8. Students who obtained a lab grade of **at least 60 per cent** but who failed the course as a whole may apply for a laboratory exemption. The laboratory work must have been completed **during one of the three preceding semesters** in which the course was offered. Apply online at www.chemistry.uoguelph.ca/labexemption. Students who are granted a wet lab exemption **must nevertheless complete the online dry computer labs available on Courselink** and may attend any Midterm Preparation Problems Lab in Week 5.

(g) **Wet Lab Courselink Website.**

You have access to two CourseLink sites for this course. The Wet Lab site provides lab information and is where your final laboratory grades will be posted.

3. COURSE WEB SITE

The CHEM*1050 website is an integral part of the course and must be accessed several times per week. All important announcements for the course will be made on the website.
The web site can be accessed through the portal **http://www.uoguelph.ca/courselink/** Your Username is your Central Login (that part of your assigned University of Guelph e- mail address before the @ sign). Your password is your Central Login Account Password. The course website provides numerous resources such as practice quizzes and a discussion board.

4. COURSE HELP

(a) **Your Lecturer.**

Your professor will be available at certain times for consultation and help. Office hours will be arranged at the first class meeting.

(b) **Chemistry Learning Centre for Lecture and Lab Help.**

Assistance is available in the Chemistry Learning Centre in LIB 360 in the Science Commons on the third floor of the library. A graduate teaching assistant will be available to assist you with both lecture and laboratory material. The Chemistry Learning Centre schedule is posted on the CHEM*1050 website.

(c) **Supported Learning Groups (SLGs)**

SLGs are regularly scheduled small group study sessions. Attendance is voluntary and open to all students enrolled in the course. The study groups are facilitated by successful senior

undergraduate students who have recently taken the course. Students who attend SLG sessions have an opportunity to apply and demonstrate their understanding of course concepts in a safe practice environment. The group study format exposes students to various approaches to learning, problem-solving, and exam preparation. The session times and locations will be available at the SLG web site. There is a link to the SLG page on the CHEM*1050 website.

(d) **Course Web Site.**

The CHEM*1050 website contains a variety of materials to assist you with the course. There are practice quizzes and examinations, examples of problems with full solutions, a question of the week, and much more.

(e) **Lab T.A.'s**

Your lab T.A. will be able to help with most lab problems are should be the first person you approach with any marking concerns. All T.A.s have their email addresses on the Content page of the CourseLink lab site.

5. Evaluation

(a) Online Homework - optional (<u>either</u> OWL or Sapling Learning)

The online homework provides a means for you to test your learning weekly. You can use the mastery-style quizzes available through OWL or the regular quizzes available through Sapling Learning. You may choose not to complete the online homework and the weights of your midterm and final examinations will be increased proportionally. If you choose to do either homework, there will be eleven assignments. Normally you will have one week to complete the assignments which are due by 11:55 p.m. on Wednesdays. The first homework assignment is due January 16. If an assignment is not attempted a grade of zero is assigned. There will be **eleven** assignments and **the top ten** will be used in calculating your final homework grade. Dropping one allows you to miss one without penalty. Don't use it up too soon in the semester. Better yet, do them all because of the learning advantage it provides. Further details are available on the course website. In addition, there is a Practice Assignment and a Math Review which are **not** for credit which may be completed.

(b) Research Study Participation

Again this semester we are offering all students the option of participating in a Learning Research Study for 2% towards their final grade. Many of you participated last semester and can do so again. All students in the corse are eligible to participate. If you choose to complete ALL components of the study, you will receive 2% towards your final grade. If you do not participate or do not complete all components, then that 2% will be added to the weighting of your mid-term and final exams. This is completely voluntary. More details will be provided in class and posted on the course website under "Content".

(c) i>Clicker Questions in Class - not for credit.

Clicker questions will be used in some of the lecture sections, but they will not be available for course credit. We invite your participation if you have a clicker. We do believe they are useful learning tools. Bring them along.

(d) On-line Dry Laboratory Work (courselink.uoguelph.ca) - required Each of the four computer labs consists of three parts - experimental information in your Lab Manual, the Experiment itself, and a Marking Module. All experiments are delivered on the course website. The Experiment can be done as many times as you wish. Each time you repeat the experiments you will be given different conditions. After you are satisfied with your results and have completed all calculations **only then** open the Marking Module to submit your results.

1. On-line Computer Lab A: Bomb Calorimeter. It is to be completed between Jan. 13 and Feb. 2. Your results must be submitted to the Marking Module by Feb. 2, 11:55 p.m.

2. On-line Computer Lab B: ΔG°, ΔH°, ΔS°

It is to be completed between Jan. 27 and Mar. 2. Your results must be submitted to the Marking Module by Mar. 2 at 11:55 p.m.

3. On-line Computer Lab C: Electrolysis.

It is to be completed between Feb. 24 and Mar. 16. Your results must be submitted to the Marking Module by Mar. 16 at 11:55 p.m.

4. On-line Computer Lab D: Catalytic Hydrolysis of Salacin.

It is to be completed between Mar. 17 and Apr. 4. Your results must be submitted to the Marking Module by Apr. 4 at 11:55 P.M.

(e) Wet Laboratories and Laboratory Quizzes - required unless exempted

As mentioned above, the wet labs and the associated lab quizzes (on-line) are required unless you are allowed a lab exemption having successfully completed the lab portion in an earlier course attempt. Be sure to apply on-line for the lab exemption by January 9 (see earlier in this document for details).

(f) Midterm Examination Saturday, February 8, 16:30 to 18:00 (4:30 - 6:00 P.M.) - required

Room assignments will be posted on the CHEM*1050 website. This examination covers the material from Weeks 1 to 5.

Midterm Conflict: Go to www.chemistry.uoguelph.ca/alternateexam, select this course and indicate the reason for needing the alternate exam time. Having another exam nearby - even on the same day - is not an acceptable reason for taking the alternate exam time, unless the exams actually overlap in time. The alternate exam time is Thursday, February 6 from 5:30 to 7:00 P.M. The location will be announced later.

(g) Final Examination: Thursday, April 17, 2:30 to 4:30 P.M. - required

The final examination covers the entire course. The rooms will be assigned by the registrar and you will be able to find your room assignment by checking *www.uoguelph.ca/registrar/scheduling/index.cfm?exam_winter* prior to the final exam period.

(h) All examinations will be closed book, with **no** written or printed materials of **any** kind permitted. Computers or calculators capable of storing text information or formulas are **not allowed**.

(i) The course grade will be calculated according to the following schemes, depending upon whether or not you chose to participate in the online homework activities. The scheme that gives you the highest final grade will be used.

Evaluation Activity	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Mid-Term Examination	24%	29%	25%	30%
Final Examination	39%	44%	40%	45%
Wet Laboratories and Quizzes	15%	15%	15%	15%
On-line Dry Laboratories	10%	10%	10%	10%
Online Homework (optional)	10%	0%	10%	0%
Research Study (optional)	2%	2%	0%	0%

6. POLICY ON MISSED EXAMINATIONS.

A grade of zero will be assigned for any missed examination except for valid medical or compassionate reasons.

Missed Midterm Exam. For a missed midterm examination, documentation must be given to your professor in person. There is no need to consult a doctor to obtain a note. However, if you have consulted a medical practitioner because of illness or injury, the doctor's note is acceptable documentation. In the case of a missed midterm, if a valid reason for missing the midterm is received, the weighting value of the midterm will be added to the final examination.
No make-up midterm will be given.

Missed Final Exam. Consult the Undergraduate Calendar and your Program Counsellor.

7. Lecture Schedule

Please read the relevant sections in the textbook before coming to the lecture.

Weeks/Dates	Topics	Textbook
Weeks 1 - 5 January 6 - February 7	Energy, Heat, Enthalpy, Work, Thermochemical Equations, Calorimetry, Hess's Law, Standard Enthalpies of Formation. Bond Enthalpies, Ionic Compounds Entropy, Free Energy, Thermodynamics and Equilibrium. Bioenergetics.	Sections 6.1 - 6.9 Section 18.1 Sections 9.1 and 9.11 Sections 18.2 - 18.7
Saturday February 8	Mid-Term Examination. Includes material from weeks 1 - 5	

Weeks/Dates	Topics	Textbook
Week 6 February 10 - February 14	Redox processes, half-reactions, balancing redox reactions.	Section 19.1
February 17 - February 21	Winter Break - No Classes	
Weeks 7 - 9 February 24 - March 14	Voltaic Cells, Cell notation, Electromotive Force, Standard Cell Potentials, Standard Electrode Potentials, Equilibrium Constants from Cell Potentials The Nernst Equation, Commercial Cells Electrolysis	Sections 19.2 - 19.11
Weeks 10 - 12 March 17 - April 4	Reaction Rates, Experimental Kinetics, Rate and Concentration, rate Laws, Temperature and rate, Arrhenius Equation, Reaction Mechanisms, Catalysis. Radioactive Decay	Sections 13.1 - 13.9 Section 20.4
Thursday April 17 2:30 P.M.	Final Exam. Covers all course material, but with emphasis on material covered since the mid-term (Electrochemistry and Reaction Kinetics).	

8. Lab Schedule

	Group A Students (Odd Section Number)	Group B Students (Even Section Number)
Week 1: January 6 - January 10	Check In and Safety. Arrive at regular starting time.	Check In and Safety. Arrive 90 minutes AFTER regular starting time.
Week 2: January 13 - January 17	Experiment #1: Enthalpy of Formation. Prelab Quiz (due 7:00 A.M. January 13) on WHMIS and Experiment #1.	On-line Computer Lab A - Bomb Calorimeter.
Week 3: January 20 - January 24	On-line Computer Lab A - Bomb Calorimeter.	Experiment #1: Enthalpy of Formation. Prelab Quiz (due 7:00 A.M. January 20) on WHMIS and Experiment #1. Arrive at regular start time.
On-line Computer Lab A results must be submitted by both groups by Sunday, February 2, 11:55 P.M.		

	Group A Students (Odd Section Number)	**Group B Students (Even Section Number)**
Week 4: January 27 - January 31	Experiment #2: Equilibrium Constant. Prelab Quiz (due 7:00 A.M. January 27).	On-line Computer Lab B - ΔG°, ΔH°, and ΔS°.
Week 5: February 3 - February 7	Mid-Term Exam Preparation Problems Lab. Arrive at regular starting time.	Mid-Term Exam Preparation Problems Lab. Arrive 90 minutes AFTER regular starting time.
Week 6: February 10 - February 14	On-line Computer Lab B - ΔG°, ΔH°, and ΔS°.	Experiment #2: Equilibrium Constant. Prelab Quiz (due 7:00 A.M. February 10). Arrive at regular start time.
February 17 - February 21	Winter Break	Winter Break
Week 7: February 24 - February 28	Experiment #3: Voltaic Cells. Prelab Quiz (due 7:00 A.M. February 24).	On-line Computer Lab C - Electrolysis.
On-line Computer Lab B results must be submitted by both groups by Sunday, March 2, 11:55 P.M.		
Week 8: March 3 - March 7	On-line Computer Lab C - Electrolysis.	Experiment #3: Voltaic Cells. Prelab Quiz (due 7:00 A.M. March 3). Arrive at regular start time.
Week 9: March 10 - March 14	Experiment #4: Chemical Kinetics	On-line Computer Lab D - Catalytic Hydrolysis of Salacin
Documentation is due to your T.A this week for any experiments #1, #2, or #3 lab absences.		
On-line Computer Lab C results must be submitted by both groups by Sunday, March 16, 11:55 P.M.		
Week 10: March 17 - March 21	On-line Computer Lab D - Catalytic Hydrolysis of Salacin	Experiment #4: Chemical Kinetics. Arrive at regular start time.
Week 11: March 24 - March 28	Clean Up. Arrive at regular starting time.	Clean Up. Arrive 30 minutes AFTER regular starting time.
On-line Computer Lab D results must be submitted by both groups by Friday, April 4, 11:55 P.M.		
Week 12: March 31 - April 4	Check Lab Grades. Arrive at regular starting time.	Check Lab Grades. Arrive 30 minutes AFTER regular starting time.

	Group A Students (Odd Section Number)	Group B Students (Even Section Number)
Any remaining documentation for lab absences must be submitted. All missed labs without proper excuse notes receive zero.		

9. END of CHAPTER PROBLEMS

Problems are assigned to reinforce the principles covered in lectures, to help you to develop problem-solving skills, and to check your own knowledge. Work done on the problems is not graded, but there is a good correlation between mastering the problems on a week-by-week basis and performance in the course as a whole.

Work the problems in the week that the material is covered in lectures.

A common reason why students fail first year Chemistry is that they fall so far behind with the material that they never catch up. Lectures become harder to comprehend without the reinforcement of constant practice.

Work the problems first, then look at the solutions. Working from the solutions is **not** useful for learning.

Solutions to problems

The detailed solutions to the problems are in the Student Solutions Manual. Several copies of the Student Solutions Manual will be on two-hour reserve in the library along with several copies of the text.

Topic I: Thermodynamics. Weeks 1 to 5.

6.35, 6.37, 6.41, 6.53, 6.55, 6.59, 6.61, 6.67, 6.69, 6.79, 6.81, 6.85, 6.99, 6.103, 6.115, 6.117, 6.155.
18.23, 18.25, 18.27, 18.29, 18.31, 18.35, 18.39, 18.43, 18.45, 18.55, 18.61, 18.65, 18.69,
9.85, 9.107, 9.109,
18.73, 18.75, 18.83, 18.85, 18.89, 18.97, 18.108, 18.121.

Topic II: Electrochemistry. Weeks 6 to 9.

19.39, 19.41, 19.101 19.25, 19.33, 19.43, 19.45, 19.47, 19.51, 19.53, 19.55, 19.59, 19.61,19.63, 19.67, 19.71, 19.75, 19.79, 19.83, 19.85, 19.87, 19.91, 19.93, 19.95, 19.105, 19.111, 19.113, 19.117, 19.119, 19.123, 19.141.

Topic III: Chemical Kinetics. Weeks 10 - 12:

13.31, 13.33, 13.41, 13.45, 13.49, 13.53, 13.55, 13.57, 13.59, 13.63, 13.69, 13.71,
13.75, 13.79, 13.81, 13.85, 13.99, 13.101, 13.105, 13.107, 13.117, 13.119, 13.125,13.143.
20.27, 20.61, 20.63, 20.67, 20.75.

10. UNIVERSITY POLICIES

a) **E-mail Communication** – As per university regulations, all students are required to check their uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.

b) **Accessibility** – The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.csd.uoguelph.ca/csd/

c) **Academic Misconduct Policy** –The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

d) **Recording of Materials** – Presentations which are made in relation to course work – including lectures – cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

e) **Resources** – Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:

http://www.uoguelph.ca/registrar/calendars/index.cfm?index

i. **Drop Date**: The last date to drop one-semester courses, without academic penalty, is March 7. For regulations and procedures for dropping courses, see the Undergraduate Calendar:

http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c03/c03-drop.shtml

ii. **Schedule of Dates**:www.uoguelph.ca/registrar/calendars/undergraduate/current/c03/index.shtml