Student Course Information
General Chemistry II
CHEM*1050
Winter 2015

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 Coordinator: Prof. Dan THOMAS SCIE 2504 dfthomas@uoguelph.ca

Lecturers	Section	Room	Days	Time
Prof. Lori Jones lojones@uoguelph.ca	1	ROZH 104	Tuesday Thursday	1:00 – 2:20 P.M.
Prof. Lori Jones lojones@uoguelph.ca	2	War Mem Hall	Tuesday Thursday	8:30 – 9:50 A.M.
Prof. Mark Baker mbaker@uoguelph.ca	3	War Mem Hall	Monday Wednesday Friday	3:30 – 4:20 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. The 8th and 9th editions are also acceptable, though the numbering of end-of-chapter questions may be slightly 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) **Sapling Learning Access** (optional). To complete the optional online homework you need to purchase access to a Sapling Learning account. Use the link on CourseLink (*Content* → *_Main Course Resources*) to set-up your account. Sapling provides a brief grace period on payment, so one can explore the site prior to deciding to pay for access. Semester access ($32 USD) is purchased online (credit card, pre-paid credit card or Paypal account). Alternatively, you may have purchased two semester access last semester in CHEM*1040 ($48 USD). If so, your account should be ready for CHEM*1050.

(h) A**n iClicker Response Unit.** Is available from the University Bookstore. The iClicker unit will be used in sections 01 and 02 but not in section 03. They will not be used for grades, but only for in-class engagement and student feedback. Bring it if you are attending either lecture section that is using it.

2. WET LABORATORY

Begins in Week 1 which starts Monday January 5. 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. 0114 – 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 printout dated January 1, 2015 (or an image on a cell phone, tablet, or laptop) or later of "My Class Schedule" from Web Advisor to your first lab. Lab times are listed on WebAdvisor.

(c) **Laboratory Quizzes - completed on-line.** Pre-lab quizzes are worth 3% of your final grade and are based on the wet lab activity you will be completing during the coming week; refer to the Laboratory Schedule. Each pre-lab quiz will open on the Thursday before your particular wet lab and will close 60 minutes before the start of your lab period. You have two attempts at each quiz. To access, go to "Content" and "Links to Pre-lab Quizzes".

(d) **Laboratory Reports.** Reports will be submitted electronically as in CHEM*1040, they being completed online through Chemistry's General Lab Marker System. During your lab period, you will collect your data and submit a copy to your T.A. before leaving. You then complete the lab report online and submit it online for grading. Lab reports are normally due 1 week after your lab by 11:55 P.M. on the day of your normal lab period. Marks are deducted for lateness. You must ensure that your report has been submitted by the deadline. Just saving it is insufficient, you must confirm the submission of your report for marking.

(e) **Missed Wet Laboratory.** Refer to the CHEM*1050 course website which has a link to a page to explain what to do when you miss or are planning to miss a lab due to illness, compassionate reasons, or for a school-sponsored event (varsity sports, graduation, etc.).

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

DEADLINE: Wednesday, January 7. 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.

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 *(www.saplinglearning.ca)*

The online homework provides a means for you to test your learning weekly and is a way to keep up with the course and test your understanding. If you choose to complete the homework, then your mid-term and final exam weights will be decreased proportionally. If you choose to do the homework, there will be eleven assignments. Normally you will have one week to complete the assignments that are due by 11:55 P.M. on Wednesdays. The first homework assignment is due January 14. 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 but which may be completed.

(b) Research Study Participation - optional

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 course 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. 12 and Jan. 23. Your results must be submitted to the Marking Module by Jan. 25, 11:55 p.m.

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

It is to be completed between Jan. 26 and Feb. 13. Your results must be submitted to the Marking Module by Feb. 22 at 11:55 p.m.

3. On-line Computer Lab C: Electrolysis.

It is to be completed between Feb. 23 and Mar. 6. Your results must be submitted to the Marking Module by Mar. 8 at 11:55 p.m.

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

It is to be completed between Mar. 9 and Mar. 20. Your results must be submitted to the Marking Module by Mar. 29 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 7 (see earlier in this document for details).

(f) Midterm Examination Saturday, February 7, 9:30 to 11:00 A.M. - required

Room assignments will be posted on the CHEM*1050 website. This examination covers the material from Weeks 1 to 5. If you are registered with SAS, the SAS Exam Centre does not open on Saturdays until 11:30 A.M., so you will be writing at this later time or another as arranged with SAS.
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 5 from 5:30 to 7:00 P.M. The location will be announced later.

(g) Final Examination: Wednesday, April 8, 8:30 to 10:30 A.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**.

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

Evaluation Activity	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Mid-Term Exam	24%	29%	25%	30%
Final Exam	39%	44%	40%	45%
Pre-Lab Quizzes	3%	3%	3%	3%
Wet Laboratories	12%	12%	12%	12%
Dry Laboratories (on-line)	10%	10%	10%	10%
Sapling Homework (optional)	10%	0%	10%	0%
Research Study (optional)	2%	2%	0%	0%

6. POLICY ON MISSED WORK

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 sent to your instructor or the course coordinator. 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 as soon as possible.

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

Other Missed Work. Contact either the course co-ordinator or your instructor with your name, ID#, and email address. If a valid excuse is received, your work will be re-evaluated. Otherwise, a grade of zero is assigned.

See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration
www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

7. LECTURE SCHEDULE

Weeks/Dates	Topics	Textbook
Weeks 1 - 5 January 5 - February 6	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 7 9:30 A.M.	Mid-Term Examination. Includes material from weeks 1 - 5	
Week 6 February 9 - February 13	Redox processes, half-reactions, balancing redox reactions.	Section 19.1
February 16 - February 20	Winter Break - No Classes	
Weeks 7 - 9 February 23 – March 13	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 16 - April 3	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
Wednesday April 8 8:30 A.M.	Final Examination. Covers all course material, but with emphasis on material covered since the mid-term (Electrochemistry and Reaction Kinetics).	

8. LABORATORY SCHEDULE

	Group A Students (Odd Section Number)	Group B Students (Even Section Number)
Week 1: January 5 - January 9	Check In and Safety. Arrive at regular starting time.	Check In and Safety. Arrive 90 minutes AFTER regular starting time.
Week 2: January 12 - January 16	Experiment #1: Enthalpy of Formation. Prelab Quiz on WHMIS and Experiment #1.	On-line Computer Lab A: Bomb Calorimeter.
Week 3: January 19 - January 23	On-line Computer Lab A: Bomb Calorimeter.	Experiment #1: Enthalpy of Formation. Prelab Quiz on WHMIS and Experiment #1. Arrive at regular start time.
On-line Computer Lab A results must be submitted by both groups by Sunday, January 25, 11:55 P.M.		
Week 4: January 26 - January 30	Experiment #2: Equilibrium Constant. Prelab Quiz.	On-line Computer Lab B: ΔG°, ΔH°, and ΔS°.
Week 5: February 2 - February 6	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 9 - February 13	On-line Computer Lab B: ΔG°, ΔH°, and ΔS°.	Experiment #2: Equilibrium Constant. Prelab Quiz. Arrive at regular start time.
February 16 - February 20	Winter Break	Winter Break
On-line Computer Lab B results must be submitted by both groups by Sunday, February 22, 11:55 P.M.		
Week 7: February 23 - February 27	Experiment #3: Voltaic Cells. Prelab Quiz.	On-line Computer Lab C: Electrolysis.
Week 8: March 2 - March 6	On-line Computer Lab C: Electrolysis.	Experiment #3: Voltaic Cells. Prelab Quiz. Arrive at regular start time.
On-line Computer Lab C results must be submitted by both groups by Sunday, March 8, 11:55 P.M.		
Week 9: March 9 - March 13	Experiment #4: Chemical Kinetics. Prelab Quiz.	On-line Computer Lab D: Catalytic Hydrolysis of Salacin
Documentation, submitted to the Lab Submission site, is due this week for experiments #1, #2, or #3 lab absences.		
Week 10: March 16 - March 20	On-line Computer Lab D: Catalytic Hydrolysis of Salacin	Experiment #4: Chemical Kinetics. Prelab Quiz. Arrive at regular start time.
Week 11: March 23 - March 27	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 Sunday, March 29, 11:55 P.M.		
Week 12: March 30 - April 3	Final Exam Preparation Problems Lab. Arrive at regular starting time.	Final Exam Preparation Problems Lab. Arrive 90 minutes AFTER regular starting time.
April 3 is absolutely the last day to resolve any lab grade questions. It is also the last day to submit documentation for lab absences for all labs.		

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 9.85, 9.107, 9.109

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, 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 6. For regulations and procedures for dropping courses, see the Undergraduate Calendar:
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

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