

Student Course Information

General Chemistry II

CHEM*1050

Winter 2017

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 SSC 2504 dfthomas@uoguelph.ca

Lecturers	Lecture	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	ROZH 104	Tuesday Thursday	8:30 – 9:50 A.M.
Dr. Rick Delaat rdelaat@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, log₁₀ and 10^x functions. Calculators or notebook computers capable of storing text information are **NOT** allowed in examinations.
- (f) **Graphs.** You will need to create numerous graphs in both the wet and the dry labs this semester. You may use a spreadsheet graphing program such as Excel or Numbers to create your graphs. If you do create them by hand, you will need to purchase appropriate graph paper. You can find it at the Bookstore. Be sure it is the 10 lines/cm variety so that it has sufficient resolution.
- (g) **Mastering Chemistry Access** (optional). To complete the optional online homework assignments one must purchase access to a Mastering Chemistry account. There is a grace period on payment of two weeks, so one can explore the site prior to paying for access. A 36-month access code can be purchased through one of the campus bookstores, e.g., University Bookstore is selling access codes electronically through <http://bookstore.uoguelph.ca/t-digitalsearch.aspx> for \$80.25. If you purchased this in CHEM*1040 last semester, your account should be ready for CHEM*1050.
- (h) **An iClicker Response Unit.** Some classes may be using iClickers to promote engagement during the class lecture session and if you have one, you are encouraged to bring it. However, no grades will be assigned for iClicker participation this semester.

2. WET LABORATORY

Begins in Week 1 which starts Monday January 9. 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 orientation and safety training. This lab is a prerequisite for all subsequent labs. As proof that you are registered in a particular lab, you must bring to your first lab a printout or an image on a cell phone, tablet, or laptop of “My Class Schedule” from Web Advisor dated January 1, 2017 or later. Lab times are listed on WebAdvisor.
- (c) **Online Lab Safety Course.** Most of you will have completed the Lab Safety Course on-line during CHEM*1040. Come with your SSS1 completion badge to show your T.A. If you have not previously completed it, you will find the course in your list of CourseLink courses and it is entitled “Student Science Safety”. You must complete this course with a grade of 90% or better before you undertake any labs in the course. When you complete it, you will receive an electronic badge in CourseLink which can be shown to your T.A. You will have an unlimited number of attempts to complete the safety course to obtain the passing grade.
- (d) **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 > Pre-lab Quizzes”.
- (e) **Laboratory Reports.** Reports will be submitted electronically as in CHEM*1040, and will be 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. To access, go to “Content > Course Resources > Submit Wet Labs Here”.

Review your lab report as soon as the grading has been released. If you have any questions, you need to discuss the grading with your T.A. within 1 week of the graded report being released. If you still have grading concerns, apply for a regrade by submitting a detailed note given to your T.A. or to your class instructor. The request will be forwarded to the department who will assign someone to review the grading.

- (f) **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.). To access, go to “Content > Wet Lab Resources > Purple Page for Lab Absences.
- (g) **Laboratory Exemptions for students who are repeating CHEM*1050.**

DEADLINE: Wednesday, January 11. Students who obtained a wet 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 (F16, W16, F15)** 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 Exam Preparation Problems Lab in Weeks 5 and 11.

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 course website. (Content > Course Resources > Chemistry Learning Centre)

(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, and more.

(e) Lab T.A.s

Your lab T.A. will be able to help with most lab problems and should be the first person you approach with any marking concerns. All T.A.s have their email addresses on our CourseLink site. To access it, go to "Content > Wet Lab Resources > Lab T.A. Contact Information"

5. EVALUATION

(a) Online Homework - optional (*Mastering Chemistry*)

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. Normally you will have one week to complete the assignments which are due by 11:55 P.M. on Fridays. The first homework assignment is due January 20. 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 are two assignments that are not for credit: an Introduction to Mastering Chemistry and a Chemistry Primer. You should do both of these before attempting the ones for credit. They will be helpful. Each Mastering Chemistry assignment consists of two principal components: the initial homework

assignment and an adaptive follow-up assignment. You will have three attempts at each question and your grade for a question will depend upon the number of attempts. If you complete an assignment under 95%, then you will be given an adaptive follow-up assignment. The assignment will depend upon which conceptual areas you did not demonstrate a mastery of the subject. You will be given up to 3 sets of additional questions where the number depends on how well you demonstrate improved understanding and how many concepts were missed in the original assignment, but it will never be more than 3 sets of questions – each set is approximately 15 minutes in length. If you receive 95% or above on the initial assignment, you will skip the adaptive follow-up work and will given that mark for the assignment. Otherwise, the mark for the assignment will be 60% of the initial mark and 40% of the mark earned on the adaptive follow-up. And then, as mentioned above, the lowest mark of the 11 assignments will be dropped and the remaining will be averaged for your final assignment mark.

(b) i>Clicker Questions in Class – not graded.

i>Clickers may be used in your class to improve student engagement, but no grades will be assigned.

(c) 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. You will be able to link to all experiments through 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 and will, therefore, collect different data with a different unknown number. Be sure to use the correct unknown number with the data you end up submitting. 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. 16 and Jan. 27. Your results must be submitted to the Marking Module by Jan. 29, 11:55 p.m.

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

It is to be completed between Jan. 30 and Feb. 17. Your results must be submitted to the Marking Module by Feb. 26 at 11:55 p.m.

3. On-line Computer Lab C: Electrolysis.

It is to be completed between Feb. 27 and Mar. 10. Your results must be submitted to the Marking Module by Mar. 12 at 11:55 p.m.

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

It is to be completed between Mar. 13 and Mar. 24. Your results must be submitted to the Marking Module by Mar. 26 at 11:55 P.M.

(d) 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 granted a wet lab exemption based on a previous course attempt. Be sure to apply on-line for the lab exemption by January 11 (see section 2g above.).

(e) Midterm Examination Saturday, February 11, 4:00 to 5:30 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: If you have a conflict with the timing of the mid-term exam, go to www.chemistry.uoguelph.ca/alternateexam, select this course and indicate the reason for needing the alternate exam time. Having another exam close in time - 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 9 from 5:30 to 7:00 P.M. The location will be announced later.

(f) Final Examination: Monday, April 10, 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.

(g) 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**.

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

Evaluation Activity	Scheme 1	Scheme 2
Mid-Term Exam	25%	30%
Final Exam	40%	45%
Pre-Lab Quizzes	3%	3%
Wet Laboratories	12%	12%
Dry Laboratories (on-line)	10%	10%
Mastering Chemistry (optional)	10%	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. Official documentation is required within five working days after the exam. A link to Program Counsellors: www.uoguelph.ca/uaic/programcounsellors

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

Other Missed Work. Provide a written explanation to 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 9 - February 10	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 11 4:00 P.M.	Mid-Term Examination. Includes material from weeks 1 - 5 (thermochemistry and thermodynamics)	
Week 6 February 13 - February 17	Redox processes, half-reactions, balancing redox reactions.	Section 19.1
February 20 - February 24	Winter Break - No Classes	
Weeks 7 - 9 February 27 - March 17	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 20 - April 7	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
Monday April 10 2:30 P.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 9 - January 13	Check In and Safety. Arrive at regular starting time.	Check In and Safety. Arrive 90 minutes AFTER regular starting time.
Week 2: January 16 - January 20	Experiment #1: Equilibrium Constant. Prelab Quiz, WHMIS.	On-line Computer Lab A: Bomb Calorimeter.
Week 3: January 23 - January 27	On-line Computer Lab A: Bomb Calorimeter.	Experiment #1: Equilibrium Constant. Prelab Quiz, WHMIS. Arrive at regular start time.
On-line Computer Lab A results must be submitted by both groups by Sunday, January 29, 11:55 P.M.		
Week 4: January 30 - February 3	Experiment #2: Enthalpy of Formation. Prelab Quiz.	On-line Computer Lab B: ΔG° , ΔH° , and ΔS° .
Week 5: February 6 - February 10	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 13 - February 17	On-line Computer Lab B: ΔG° , ΔH° , and ΔS° .	Experiment #2: Enthalpy of Formation. Prelab Quiz. Arrive at regular start time.
February 20 - February 24	Winter Break	Winter Break
On-line Computer Lab B results must be submitted by both groups by Sunday, February 26, 11:55 P.M.		
Week 7: February 27 - March 3	Experiment #3: Voltaic Cells. Prelab Quiz.	On-line Computer Lab C: Electrolysis.
Documentation, submitted to the Lab Submission site, is due March 3 for experiments #1 and #2 lab absences.		
Week 8: March 6- March 10	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 12, 11:55 P.M.		
Week 9: March 13 - March 17	Experiment #4: Chemical Kinetics. Prelab Quiz.	On-line Computer Lab D: Catalytic Hydrolysis of Salacin
Documentation, submitted to the Lab Submission site, is due March 17 for experiment #3 lab absences.		
Week 10: March 20- March 24	On-line Computer Lab D: Catalytic Hydrolysis of Salacin	Experiment #4: Chemical Kinetics. Prelab Quiz. Arrive at regular start time.
On-line Computer Lab D results must be submitted by both groups by Sunday, March 26, 11:55 P.M.		
Week 11: March 27 - March 31	Clean Up and Final Exam Preparation Problems Lab. Arrive at regular starting time.	Clean Up and Final Exam Preparation Problems Lab. Arrive 90 minutes AFTER regular starting time.
Week 12: April 3 - April 7	No lab activity.	No lab activity.
April 7 is absolutely the last day to resolve lab grade questions (first with your T.A.) and submit an application for a lab regrade. 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

E-mail Communication

As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. [See the undergraduate calendar for information on regulations and procedures for Academic Consideration.](#)

Drop Date

The last date to drop one-semester courses, without academic penalty, is Friday, March 10. For [regulations and procedures for Dropping Courses, see the Undergraduate Calendar.](#)

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

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.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd/>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. 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.](#)

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.

Resources

The [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.