

University of Guelph, College of Engineering and Physical Sciences, Department of Chemistry

## CHEMISTRY 1050 - STUDENT COURSE INFORMATION - FALL 2019

CHEM\*1050 General Chemistry II F,W (3-3) [0.50 Credit]

Lecture times: MWF 12:30 PM – 1:20 PM

Place: War Memorial Hall (WMEM) R. Hall

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

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Lecturer for this course is Professor Monteiro ([monteiro@uoguelph.ca](mailto:monteiro@uoguelph.ca)).

- 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.

- Laboratory Manual for CHEM\*1050. Purchased in the Department. Note the signs in the first-year lab corridor (second floor, Science Complex) for times and locations.

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

- A lab coat is required.

- Scientific calculator with ln, exp or ex, log<sub>10</sub> and 10<sup>x</sup> functions. Calculators or notebook computers capable of storing text information are NOT allowed in examinations.

- 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. An alternative is to print the pdf file of acceptable graph paper which is available on CourseLink under Wet Lab Resources.

- In this course, the learning objectives will comprise of the concepts described in class and in:

Chapter 6 THERMOCHEMISTRY

Chapter 18 THERMODYNAMICS

Chapter 9 ENERGETICS OF IONIC COMPOUNDS

Chapter 19 ELECTROCHEMISTRY

Chapter 13 REACTION RATES

Chapter 20 RADIOACTIVE DECAY

See “Course Resources” in <http://www.uoguelph.ca/courselink/> for more details about *learning objectives*.

- **HOMEWORK**

Homework will consist of exercises given by Prof. Monteiro during class discussions, and all odd numbered questions in PRACTICE PROBLEMS and GENERAL PROBLEMS sections of chapter 6 (pages 260-265), chapter 18 (pages 770-775), and chapter 19 (pages 820-825).

- To obtain credit in the course, a minimum of 50% in the overall course and at least 5 of the 8 lab activities (wet + dry) must have been completed, else a maximum final grade of 49% is obtained.

- Your final grade will be calculated as follows:

|                                 |                                |
|---------------------------------|--------------------------------|
| TWO (2) Mid-term in-class Exams | 40% (20% each)                 |
| Wet labs                        | 15%                            |
| Online dry labs                 | 10%                            |
| Final Exam                      | 35% (Final exam is cumulative) |

- Dates of in-class mid-term exams:

**Mid-term exam 1: Wednesday, October 9**

**Mid-term exam 2: Wednesday, November 6**

- Date of final exam: 11:30AM - 01:30PM (**2019/12/03**). Check WebAdvisor for location.

- **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. Note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. 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>

- No make-up mid-term exams will be given. If you miss any mid-term exam, a grade of zero will be assigned. However, within one week of the missed mid-term, you may provide justification/documentation to Prof. Monteiro for your absence. The percent value of the mid-term exam will be added to that of the final examination.

- In the case of a missed final exam, contact your Program Counsellor ([www.uoguelph.ca/uaic/programcounsellors](http://www.uoguelph.ca/uaic/programcounsellors)) as soon as possible. Official documentation is required within five working days of the missed examination.

- Exams will be closed book. No written notes, printed materials or electronic storage devices are permitted.

- Class discussion materials cannot be mass-distributed or supplied to any organization.

- WET LABORATORY

First laboratory

You must attend your first lab in order to receive mandatory safety training and all the required information from your TA. This safety meeting is a pre-requisite for all subsequent scheduled labs. As proof that you are registered in the lab, you must bring a computer print-out (dated Sept. 1, 2019 or later) of "My Class Schedule" from WebAdvisor to your first lab.

- 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.

- 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. Lab times are listed on WebAdvisor.

- Online Lab Safety Course. You must complete the CourseLink course entitled "Student Science Safety I (F19)" with a grade of 90% or better, before undertaking "wet" lab experiments. It takes 2-3 hours to complete. You have unlimited attempts to pass the quiz. Upon successful completion, you receive an electronic badge that you must show your TA (print or electronic form), as proof of completion, prior to being allowed to participate in Experiment #1.

- Lab Flowcharts. Prior to each "wet" lab, you must prepare a procedural flowchart to show the main tasks/procedural steps of the experiment, and the order in which they will be carried out. Your flowchart is handed in to your TA during your scheduled lab. You will not be allowed to proceed with the experiment without it. Further info can be found in your lab manual.

- 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".

- 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 > Wet Lab 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.

- 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 or medical procedure, compassionate reasons, or for a school-sponsored event (varsity sports, graduation, etc.). Go to Content > Wet Lab Resources > Purple Page for Lab Absences.
- Laboratory Exemptions (for those repeating CHEM\*1050): [www.chemistry.uoguelph.ca/labexemption](http://www.chemistry.uoguelph.ca/labexemption). **Deadline to apply: Tuesday, September 10.** Students who previously attempted the course in full (i.e., did not drop the course), obtained a wet lab grade of at least 60%, but who failed the course, may apply for a lab exemption. The lab work must have been completed in W'19, F'18 or W'18, with a maximum of one excused experiment. One must successfully apply online, by the deadline, to be granted a "wet" lab exemption. If exempted, students still must complete all online "dry" labs.
- To obtain credit in the course, a minimum of 50% in the overall course and at least 5 of the 8 lab activities (wet + dry) must have been completed, else a maximum final grade of 49% is obtained.
- COURSE WEB SITE. 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.
- COURSE HELP. Chemistry Learning Centre for Lecture and Lab Help Assistance is available in the Chemistry Learning Centre (CLC) 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) : **Mondays - Thursday 10 AM - 4 PM and Fridays 10 AM - 1 PM. CLC opens Wed., Sept. 11th.**
- Office hours in room LIB 360 Science Commons on the third floor of the library: Professor Monteiro is available for consultation and help. **Request meeting(s) with Professor Monteiro by email message with your time preference(s) during Monday - Thursday 10 AM - 4 PM and Friday 10 AM – noon.**

- 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. (Content > Course Resources > Supported Learning Groups).

#### UNIVERSITY POLICIES

- E-mail Communication. Check your University e-mail account regularly: email 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: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

- Drop Date. Last day of classes of F19 semester (Nov 29). For regulations and procedures for dropping this course, 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 show your work at any time. Students who drop the course will not be eligible for a wet lab exemption if they repeat CHEM\*1050 in a subsequent academic semester.

- Accessibility. The University promotes the full participation of students who experience disabilities in their academic programs. To that end, academic accommodations are a shared responsibility between the University and the student. When accommodations are needed, students are required to register with Student Accessibility Services (SAS). Documentation to affirm a disability is required, however, interim accommodations may be possible while that process is underway. Accommodations are available for both permanent and temporary disabilities. Common illnesses, such as a cold or the flu, do not constitute a disability. Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day. More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas).

- Recording of Materials Presentations which are made in relation to course work—including lectures—cannot be recorded or filmed 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:  
<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>

- Please note: **Friday, November 29** – class rescheduled from Monday, October 14.

| DATE                                                                                                                                                                                                                                                           | WEEK A Schedule<br>(Sections ending with ODD number)                                                                                                                                   | Activity                                   | WEEK B Schedule<br>(Sections ending with EVEN number)                                                                                                                                  | Activity                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Week 1<br>Sept.<br>9 – 13                                                                                                                                                                                                                                      | <b>Arrive for regular starting time.</b><br>Sign-in & safety training. Safety training is mandatory and a legal requirement.                                                           | Bring Class Schedule & Lab Manual          | <b>Arrive 90 min after regular starting time</b> (i.e. for 10 AM, 4 PM or 8:30 PM).<br>Sign-in & safety training. Safety training is mandatory and a legal requirement.                | Bring Class Schedule & Lab Manual          |
| Week 2<br>Sept.<br>16 – 20                                                                                                                                                                                                                                     | <b>Arrive for regular starting time.</b><br><u>Experiment 1: Equilibrium Constant.</u>                                                                                                 | <b>Pre-lab quiz on WHMIS &amp; Exp't 1</b> | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab A: Bomb Calorimetry</i>                                                                           | <i>Dry Lab A Marking Module</i>            |
| Week 3<br>Sept.<br>23 – 27                                                                                                                                                                                                                                     | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab A: Bomb Calorimetry</i>                                                                           | <i>Dry Lab A Marking Module</i>            | <b>Arrive for regular starting time.</b><br><u>Experiment 1: Equilibrium Constant.</u>                                                                                                 | <b>Pre-lab quiz on WHMIS &amp; Exp't 1</b> |
| <b>Dry Lab A: Bomb Calorimetry Marking Module DEADLINE: Sunday, September 29<sup>th</sup>, 11:55 PM.</b>                                                                                                                                                       |                                                                                                                                                                                        |                                            |                                                                                                                                                                                        |                                            |
| Week 4<br>Sept. 30 –<br>Oct. 4                                                                                                                                                                                                                                 | <b>Arrive for regular starting time.</b><br><u>Experiment 2: Enthalpy of Formation.</u>                                                                                                | <b>Pre-lab quiz on Exp't 2</b>             | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab B: <math>\Delta G^\circ</math>, <math>\Delta H^\circ</math>, and <math>\Delta S^\circ</math>.</i> | <i>Dry Lab B Marking Module</i>            |
| Week 5<br>Oct.<br>7 – 11                                                                                                                                                                                                                                       | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab B: <math>\Delta G^\circ</math>, <math>\Delta H^\circ</math>, and <math>\Delta S^\circ</math>.</i> | <i>Dry Lab B Marking Module</i>            | <b>Arrive for regular starting time.</b><br><u>Experiment 2: Enthalpy of Formation.</u>                                                                                                | <b>Pre-lab quiz on Exp't 2</b>             |
| Week 6<br>Oct.<br>16 – 18<br>(No classes<br>Oct. 14&15)                                                                                                                                                                                                        | <b>No Lab.</b><br><b>Independent Study.</b>                                                                                                                                            | No pre-lab quiz.                           | <b>No Lab.</b><br><b>Independent Study.</b>                                                                                                                                            | No pre-lab quiz.                           |
| <b>Dry Lab B: Determination of <math>\Delta G^\circ</math>, <math>\Delta H^\circ</math>, and <math>\Delta S^\circ</math> Marking Module DEADLINE: Sunday, October 20<sup>th</sup>, 11:55 PM.</b>                                                               |                                                                                                                                                                                        |                                            |                                                                                                                                                                                        |                                            |
| Week 7<br>Oct.<br>21 – 25                                                                                                                                                                                                                                      | <b>Arrive for regular starting time.</b><br><u>Experiment 3: Voltaic Cells.</u>                                                                                                        | <b>Pre-lab quiz on Exp't 3</b>             | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab C: Electrolysis</i>                                                                               | <i>Dry Lab C Marking Module</i>            |
| Week 8<br>Oct. 28 –<br>Nov. 1                                                                                                                                                                                                                                  | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab C: Electrolysis</i>                                                                               | <i>Dry Lab C Marking Module</i>            | <b>Arrive for regular starting time.</b><br><u>Experiment 3: Voltaic Cells.</u>                                                                                                        | <b>Pre-lab quiz on Exp't 3</b>             |
| Week 9<br>Nov. 4 – 8                                                                                                                                                                                                                                           | <b>Arrive for regular starting time.</b><br><u>Experiment 4: Chemical Kinetics.</u><br><b>Report due in 3 days by 11:55 PM.</b>                                                        | <b>Pre-lab quiz on Exp't 4</b>             | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab D: Catalytic Hydrolysis of Salacin</i>                                                            | <i>Dry Lab D Marking Module</i>            |
| <b>Dry Lab C: Electrolysis Marking Module DEADLINE: Sunday, November 10<sup>th</sup>, 11:55 PM.</b>                                                                                                                                                            |                                                                                                                                                                                        |                                            |                                                                                                                                                                                        |                                            |
| Week 10<br>Nov.<br>11 – 15                                                                                                                                                                                                                                     | <b>Do not go to lab room this week.</b><br><i>Online Computer Lab:</i><br><i>Dry Lab D: Catalytic Hydrolysis of Salacin</i>                                                            | <i>Dry Lab D Marking Module</i>            | <b>Arrive for regular starting time.</b><br><u>Experiment 4: Chemical Kinetics.</u><br><b>Report due in 3 days by 11:55 PM.</b>                                                        | <b>Pre-lab quiz on Exp't 4</b>             |
| Week 11<br>Nov. 18 – 22                                                                                                                                                                                                                                        | <b>Arrive at regular starting time.</b><br>Clean-up and check-out.                                                                                                                     | No pre-lab quiz.                           | <b>Arrive 90 minutes after regular starting time.</b><br>Clean-up and check-out.                                                                                                       | No pre-lab quiz.                           |
| <b>Dry Lab D: Catalytic Hydrolysis of Salacin Marking Module DEADLINE: Sunday, November 24<sup>th</sup>, 11:55 PM.</b>                                                                                                                                         |                                                                                                                                                                                        |                                            |                                                                                                                                                                                        |                                            |
| Week 12<br>Nov. 25 – 29                                                                                                                                                                                                                                        | <b>No Lab.</b><br><b>Independent Study.</b>                                                                                                                                            | No pre-lab quiz.                           | <b>No Lab.</b><br><b>Independent Study.</b>                                                                                                                                            | No pre-lab quiz.                           |
| <b>Friday Nov. 29 is absolutely the last day to resolve any lab grade questions (first with your T.A.) and submit an application for lab regrade. Any remaining lab excuses must be submitted by 5 PM on Friday Nov. 29, else a grade of zero is assigned.</b> |                                                                                                                                                                                        |                                            |                                                                                                                                                                                        |                                            |