



COURSE OUTLINE

1. **Course:** CHEM 203, General Chemistry: Change and Equilibrium - Fall 2019

Coordinator(s)

Name	Email	Phone	Office	Hours
Dr Yuen-ying Carpenter	yyscarpe@ucalgary.ca (email preferred)		EEEL 237	See D2L

Section(s)

Lecture 01: MWF 11:00 - 11:50 in SB 103

Instructor	Email	Phone	Office	Hours
Dr Yuen-ying Carpenter	yyscarpe@ucalgary.ca (email preferred)		EEEL 237	See D2L

Lecture 02: MWF 12:00 - 12:50 in SB 103

Instructor	Email	Phone	Office	Hours
Dr Yuen-ying Carpenter	yyscarpe@ucalgary.ca (email preferred)		EEEL 237	See D2L

Lecture 03: TR 08:00 - 09:15 in SB 103

Instructor	Email	Phone	Office	Hours
Dr. Jing Li	li22@ucalgary.ca	220-8797	SA 258	TBA

Tutorials begin the week of **September 16th, 2019**. *Room assignments will be posted on D2L.*

Laboratory experiments begin the week of **September 23rd, 2019**. *Consult your schedule on MyUofC for exact times and room assignments.*

Course Site:

D2L: CHEM 203 (Fall 2019) - General Chemistry: Change and Equilibrium

Note: Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Chemistry 30 (or Continuing Education - Chemistry 2) and one of Mathematics 30-1 or Mathematics 2 (offered by Continuing Education).

Antirequisite(s):

Credit for Chemistry 203 and any of 209, 213 or 301 will not be allowed.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %
Laboratory Experiments	25%
Tutorial Activities	10%
Term test 1 (MON OCT 21st 7-9 PM)	10%
Term test 2 (MON NOV 18th 7-9 PM)	15%
Final examination (Registrar Scheduled)	40%

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	92.0 %	86.0 %	82.0 %	78.0%	74.0%	70.0 %	66.0 %	62.0%	58.0%	54.0 %	50.0 %

This course has a registrar scheduled final exam.

Notes:

In order to achieve the prerequisite requirements (i.e., C-) for further Science courses, a student must meet all of the following requirements:

1. submit no less than three of the laboratory reports, *and*
2. achieve a minimum 50% in the laboratory grading, *and*
3. achieve a minimum 50% weighted average on the examinations (Term Tests and Final).

This means that if a student scores below 50% in either the laboratory component or the examinations, then the *maximum* grade they can obtain in CHEM 203 is a D+.

4. Missed Components Of Term Work:

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section M.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hrs.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize themselves with these regulations. See also [Section E.3](#) of the University Calendar.

- **Missed Term tests:** There are no deferred term test examinations Supporting documentation for a missed test must be provided to the course coordinator **within 10 business days** of the date of the term test in order for an excused absence to be considered. If an excused absence is approved, then the percentage weight of a legitimately missed midterm examination will be pro-rated among the remaining course examinations (see [Section E.3](#) of the University Calendar).
- **Missed Laboratories:** Priority for the available spaces in the scheduled make-up laboratory will be given to students with legitimate reasons for absence, as described in the documentation section above. Absences for other non-legitimate reasons (e.g. vacation, tardiness, incomplete or insufficient score in a pre-lab assignment) are not guaranteed any accommodation, and will be handled at the coordinators discretion. If a student missed an experiment or a make-up lab for non-legitimate reasons and did not perform the experiment, the contribution of that experiment in the final course grade will be zero.
- **Missed Tutorials:** Priority for a makeup tutorial will likewise be given to students with legitimate reasons for absence, with other reasons being handled at the coordinator's discretion. Due to scheduling constraints, if a makeup tutorial is not available, a legitimate absence from tutorial may be excused and replaced by the average of the other tutorial grades. A missed tutorial without legitimate reason will result in a score of zero on that tutorial.

5. Scheduled Out-of-Class Activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
CHEM 203 Term Test 1	TBA	Monday, October 21, 2019 at 7:00 pm	2 Hours
CHEM 203 Term Test 2	TBA	Monday, November 18, 2019 at 7:00 pm	2 Hours

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. Course Materials:

Recommended Textbook(s):

Flowers, Theopold, Langley, Robinson, et al., *Chemistry*: Open Stax.

Important note about your textbook:

- Our recommended text is an *open-educational resource*, freely available online through the **Open Stax** website (<https://openstax.org/details/books/chemistry-2e>). You are welcome to (i) refer to the text online, (ii) download the PDF to your own device, or (iii) purchase a print copy through the bookstore.

Recommended practice resources:

- **Top Hat** - *Active participation is an important part of your lectures* You are strongly recommended to bring you cell phone, tablet, or laptop to lectures and participate during in-class Top Hat activity questions. Access to Top Hat is free for University of Calgary students. Each student's lowest non-zero tutorial score can be replaced with their cumulative Top Hat score (see also, item 13). More details will be provided on the first day of lecture.
- **Sapling Learning** - *Practice solving chemistry problems is a critical component of this course* Recommended practice questions (with feedback) will be made available for the course on the online Sapling Learning platform. You can purchase a license for Sapling through the bookstore, or access Sapling for free on a limited number of computers on-campus. More details will be provided on the first day of lecture.

Other REQUIRED course materials (available from the bookstore):

- Lab coat & safety glasses
- A non-programmable scientific calculator (Casio FX 260 or equivalent)

7. Examination Policy:

All sections will write the same examinations. The questions are based on input from all instructors for the course. During exams students are allowed to bring only pencils, pens, erasers, their ID card, and non-programmable calculators. *Programmable TI graphing calculators from high school are not acceptable* If in doubt, check your calculator with your instructor prior to the first term test.

Students should also read the Calendar, [Section G](#), on Examinations.

8. Approved Mandatory And Optional Course Supplemental Fees:

Laboratory Breakage Fees and Locker Check-out: The Department of Chemistry has a laboratory glassware breakage fee. At the start of the course, each student is assigned a locker and checks-in to establish that they have a complete set of usable glassware. By signing for check-in, a student agrees that they are now responsible for the glassware until check out. Any equipment that is missing, unusable or has been replaced during the semester will be charged to the student. All students, even those who withdraw early from the course must check out of the laboratory before the last day of lectures (**December 6, 2019**). Any student who fails to check out before the last day of lectures for the term will be assessed a charge of \$30.00. If this fee is not paid by the payment deadline (Jan 31 for Fall courses, April 30 for Winter courses, July 15 for Spring courses), an additional \$10.00 administrative fee will be charged and university services (registration, transcripts, etc.) may be withheld.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. Human Studies Statement:

If you agree, your course work may be used for research purposes. Your responses will remain anonymous and confidential. Grouped data (no individual responses) may be used in academic presentations and publications. Participation in such research is voluntary and will not influence grades in this course. Students' signed consent forms will be withheld from instructors until after final grades are submitted. More information will be provided at the time student participation is requested.

See also [Section E.5](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **10 business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate

degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Chemistry, Dr. Farideh Jalilehvand by email ahugchem@ucalgary.ca or phone 403-220-5353. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

13. Laboratory and Tutorial Information

In addition to the Lecture component of the course, students are scheduled for tutorials and laboratory experiments in alternating weeks. In any given week, all students in the course will perform either a tutorial or a laboratory experiment. **You must attend your assigned tutorial or laboratory time slot, unless you have been given permission by the coordinator.**

Laboratory Experiments. It is mandatory that students wear a lab coat and safety glasses at all times when working in the lab. Students wearing inappropriate laboratory attire will not be permitted to conduct experiments for safety reasons. The manual can be found online (course D2L site). You must consult the online laboratory manual prior to attending any of your scheduled lab periods and printout the required portion of the manual that outlines the procedures you will be doing.

Students repeating the course within the last two years can be exempted from the Laboratory Component of the Course if a grade of 75% or higher was obtained. The lab grade achieved on the previous attempt will be carried forward. Such students must contact the Chemistry Undergraduate Program Administrator in the Chemistry Main Office, SA 229 **before the drop date (September 12, 2019).**

Tutorials. Tutorials allow students to meet and work closely with other students, both collaborating in small groups on problems and providing peer feedback on individual work. A student's lowest non-zero tutorial grade can be replaced by cumulative participation scores from in-lecture Top Hat questions.

14. Laboratory Safety Course

All undergraduate students taking chemistry laboratories are required to complete an introductory course (approx. 50 minutes) on laboratory safety. This course is presented in an online format. The Safety Course must be completed before the first laboratory experiment. Students who do not complete the safety lessons will subsequently be denied admission to the laboratories. While it will not count directly to the final grade, the

material is considered to be part of the course and is therefore appropriate for inclusion into laboratory pre-labs and exams. Students who have previously completed the Chemistry Safety Course at the University of Calgary in the past five years are NOT required to repeat it.

Course Outcomes:

- Use the kinetic molecular theory for ideal gases as a model to explain relationships between temperature, kinetic energy, and reactivity
- Apply principles of chemical equilibria to predict the extent of aqueous chemical changes, including acid/base reactions, dissociation of ionic species, and redox reactions in electrochemical cells
- Identify factors that affect reaction rate, depict reaction rate with graphs and symbols, and explain rates at the molecular level
- Identify the thermodynamic enthalpy and entropy changes associated with a chemical reaction to determine which chemical reactions may or may not occur spontaneously, and describe how to alter that spontaneity.
- Use chemical equations and empirical measurements to solve quantitative problems relating to kinetic, thermodynamic and equilibrium principles
- Communicate the results of chemical changes in terms of observable macroscopic outcomes, molecular-scale models/representations, and mathematical equations. Communicate experimental results with appropriate precision of language and measurement.

Department Approval:

Electronically Approved

Date: 2019-08-30 14:01

Associate Dean's Approval for out of
regular class-time activity:

Electronically Approved

Date: 2019-08-30 14:12