



COURSE OUTLINE

1. **Course:** CHEM 203, General Chemistry: Change and Equilibrium - Winter 2024

Coordinator(s)

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

Section(s)

Lecture 01 : MWF 11:00 - 11:50 in MFH 162

Instructor	Email	Phone	Office	Hours
Dr Bronwen Wheatley	bmmwheat@ucalgary.ca	403 220-8077	SA 144C	please e-mail

Lecture 02 : TR 09:30 - 10:45 in MFH 162

Instructor	Email	Phone	Office	Hours
Dr Kevin Thurbide	thurbide@ucalgary.ca	220-5370	SB 219	TuTh 2:00 - 3:00 pm

Dr. Bronwen Wheatley is the **course/tutorial coordinator**. Dr. Yuen-ying Carpenter is the **laboratory coordinator**.

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

CHEM 203 in Winter 2024 is an in-person course, with lectures, labs, and tutorials designed to be attended on-campus.

The Tutorial activities and Lab Experiments will alternate on a weekly basis, except for the week of Term Break (February 19th-23rd).

Course Site:

CHEM 203 - ALL - (Winter 2024) - General Chemistry: Change and Equilibrium

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

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Chemistry EDI Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Associate Head EDI, Belinda Heyne (bjmheyne@ucalgary.ca)

2. **Requisites:**

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

Prerequisite(s):

Chemistry 30 or 212 (or Continuing Education - Chemistry 2) and one of Mathematics 30-1, 212 or Mathematics 2 (offered by Continuing Education).

Antirequisite(s):

Credit for Chemistry 203 and any of 209, 213, 301 or Engineering 204 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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Lab Activities ¹	20%	Ongoing		
Tutorial #1 ²	2%	Jan 25 2024		
Tutorial #2 ³	2%	Feb 08 2024		
Term Test #1 ⁴	12%	Feb 09 2024 at 06:00 pm (2 Hours)	in-person	TBD
Tutorial #3 ⁵	2%	Feb 29 2024		
Tutorial #4 ⁶	2%	Mar 14 2024		
Term Test #2 ⁷	24%	Mar 15 2024 at 06:00 pm (2 Hours)	in-person	TBD
Tutorial #5 ⁸	2%	Mar 28 2024		
Registrar Scheduled Final Exam	34%	Will be available when the final exam schedule is released by the Registrar	in person	Will be available when the final exam schedule is released by the Registrar

¹ Lab Activities begin on January 15th, 2024. There are six bi-weekly activities. Your first lab week (Lab 0) is online and self-paced; all remaining lab weeks (Labs 1-5) are in-person experiments, as scheduled in your Student Centre. Each lab may be graded on a combination of different activities due (i) before, (ii) during, and (iii) after the lab period. Details will be available on D2L. Your overall lab grade will be calculated based on your highest FOUR (4) of five in-person experiment weeks (Labs 1-5).

² No Tutorial #1 work will be accepted beyond Thursday, January 25.

³ No Tutorial #2 work will be accepted beyond Thursday, February 8.

⁴ The midterm could start as early as 6 p.m. and end as late as 8:30 p.m. The day and time will be confirmed on D2L.

⁵ No Tutorial #3 work will be accepted beyond Thursday, February 29.

⁶ No Tutorial #4 work will be accepted beyond Thursday, March 14.

⁷ The midterm could start as early as 6 p.m. and end as late as 8:30 p.m. The day and time will be confirmed on D2L.

⁸ No Tutorial #5 work will be accepted beyond Thursday, March 28.

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	95.0 %	87.0 %	82.0 %	77.0%	72.0%	66.0 %	62.0 %	58.0%	54.0%	50.0 %	45.0 %

This course will have a Registrar Scheduled Final exam that will be delivered in-person and on campus. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

In order to be awarded an overall letter grade of C- (pre-requisite pass) or better, students must:

- o attend and submit a minimum of three of five in-person lab activities, and
- o achieve a minimum of 50% in the lab component of the course, and
- o achieve a minimum of 50% on the weighted average of the three timed examinations (i.e. Term Test #1, Term Test #2, and the Registrar-scheduled final exam)

The University of Calgary offers a [flexible grade option](#). Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. Missed Components Of Term Work:

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

Laboratories: If you will miss a laboratory session, fill out the absence form (on D2L) as early as possible (minimum 14 days in advance for a scheduled absence; within 48 hours of the missed lab for an emergency or illness). While our ability to provide make-up labs is limited by staffing and room capacity, we strongly encourage you to apply for a makeup lab when possible to benefit from these hands-on experiences. While priority seating in the makeup lab is offered to students facing circumstances outside of their control, if spaces are available, other students may be placed in the makeup when possible.

Absence from **at most two of the lab activities** in this course could be excused under extenuating circumstances. Any single missed laboratory will be automatically dropped, in accordance with the course policy of calculating lab grades based on the highest 4 of 5 activities (see Section 3). We encourage students who cannot makeup a given lab to complete the exercises and consult their TA or the lab coordinator to ensure that they are confident in the learning outcomes therein.

- *If ongoing extenuating circumstances may prevent a student from attending the required minimum of three in-person labs, it is recommended that they meet with the lab coordinator as soon as possible to discuss what options may be in the best interest of the student's long-term learning.*

Tutorials: Because of scheduling and room-size limitations, there are limited make-up tutorial opportunities. The D2L tutorial quizzes are available during the week of tutorial but close for **all** students at the end of the **Thursday** of the tutorial week.

Exams: There are no deferred midterm exams. If you are unable to write your midterm exam, contact the course coordinator as early as possible (minimum 14 days in advance for a scheduled absence; within 48 hours of the missed exam for an emergency or illness). If you have a course conflict with the out-of-class exam, notify the course coordinator. Accommodation for a missed midterm is handled on a case-by-case basis by consultation with the course coordinator. Absences that were not reported according to this outline will automatically be assigned a score of 0 when the exam is graded for the class.

5. Scheduled Out-of-Class Activities:

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

Activity	Location	Date and Time	Duration
Midterm - 1	TBD	Friday, February 9, 2024 at 6:00 pm	2 Hours
Midterm - 2	TBD	Friday, March 15, 2024 at 6:00 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.

If you have a conflict with another course and either CHEM 203 midterm exam, contact the CHEM 203 course coordinator at least 14 days in advance of the exam.

6. Course Materials:

The OER that was used to build this semester's content is found here: <https://openstax.org/details/books/chemistry-2e>

That same OER is currently being edited for U of C purposes and will be referred to in the lab component of the course: <https://chem-textbook.ucalgary.ca/>

Students will be able to better participate in tutorials if they can bring note-taking devices and writing instruments.

Other Required Course Materials

Available from the campus bookstore, or any available retailer.

- Lab coat (full length / knee length)
- Safety glasses or goggles - CSA approved, with side shields

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

Tutorial Questions: These five sets of tutorial questions are all 'open-book' and allow the use of all course resources (e.g. D2L, course textbook, lecture notes, etc.); they function as a check-in every tutorial week. We strongly recommend you attend tutorial prior to answering them.

Term Tests and Final Exam: These exams are to be completed individually. The exams are 'closed book' - no resources will be allowed other than your non-programmable calculator and a model kit. Note that model kits are allowed but are not expected to provide insight for answering the exam questions. The exams will require the use of a non-programmable calculator; we recommend using the same calculator during other course activities (tutorials and labs) so that you can easily operate your calculator prior to the exams. Additional information will be posted on D2L prior to the exam to give you details about the data and formulas that will be provided to you as part of your exam.

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

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

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:

Students will not participate as subjects or researchers in human studies.

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 **ten 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 submit the Reappraisal of Graded Term work [form](#) to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. 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 Services:** For more information, see their [website](#) or call [403-210-9355](#).

c. **Sexual Violence:** 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](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).

d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.

e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: science1@su.ucalgary.ca, science2@su.ucalgary.ca, science3@su.ucalgary.ca,

f. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Associate Head, Undergraduate by email ahugchem@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
[Student Academic Misconduct Policy](#) and [Procedure](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- h. **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.
- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). 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.
- j. **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.

13. Lab exemptions

Students who have previously completed the laboratory component in Winter 2022 or later may choose to be exempted from repeating the lab component of the course, if they earned an overall lab grade of 75% or higher. Students opting to exempt from the lab should be aware that...

- they must still complete the tutorial component of the course;
- the labs in Winter 2024 may be different from prior labs in this course;
- the material covered in these labs will be integrated into other course assessments; and,
- the lab grade achieved on the previous attempt will be carried forward.

Prior to applying for an exemption, students are encouraged to connect with the lab coordinator to better understand the risks and benefits in their specific course, as well as what access they will (or will not) have to lab materials or feedback as an exempt student.

Students applying for a lab exemption should apply online through the Undergraduate Science Center (<https://science.ucalgary.ca/usc-lab-exemption-application>) no later than **Monday January 15th 2024**. Students registering in the course after this date should complete this form or contact the USC as soon as possible if they wish to apply for an exemption.

14. Laboratory Safety Course.

All undergraduate students taking chemistry laboratories are required to complete an introductory course (approx. 50 minutes) on laboratory safety.

- In CHEM 203, time has been set aside for you to complete the Safety Course as part of your first week of labs (**Lab 0, week of January 15**). This course is presented in a self-paced, online format and information on how to access it can be found on the course D2L site.
- Students who have previously completed the Chemistry Undergraduate Safety Course at the University of Calgary in the past five years are NOT required to repeat it.

The Safety Course must be completed before your first in-person laboratory experiment (Lab 1). *You will not be permitted to enter any laboratory space until you have successfully completed the safety course.*

While the Safety Course will not count directly towards the final grade, the material is considered to be part of the course and is therefore appropriate for inclusion into laboratory assessments and course exams

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.

Electronically Approved - Jan 05 2024 14:48

Department Approval

Electronically Approved - Jan 05 2024 16:37

Associate Dean's Approval