



COURSE OUTLINE

1. **Course:** CHEM 209, General Chemistry For Engineers - Fall 2021

Lecture 01: R 08:00 - 08:50 in ICT 217

Instructor	Email	Phone	Office	Hours
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA
Dr. Amanda Musgrove	amanda.musgrove@ucalgary.ca	--	SA 144F	TBA (see D2L)

Lecture 02: R 10:00 - 10:50 in ICT 114

Instructor	Email	Phone	Office	Hours
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA
Dr. Amanda Musgrove	amanda.musgrove@ucalgary.ca	--	SA 144F	TBA (see D2L)

Lecture 05: R 13:00 - 13:50 in ICT 114

Instructor	Email	Phone	Office	Hours
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA
Dr. Amanda Musgrove	amanda.musgrove@ucalgary.ca	--	SA 144F	TBA (see D2L)

Lecture 03: F 08:00 - 08:50 in ENE 123 and 08:00 - 08:50 in ENE 127

Instructor	Email	Phone	Office	Hours
Dr. Amanda Musgrove	amanda.musgrove@ucalgary.ca	--	SA 144F	TBA (see D2L)
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA

Lecture 04: R 15:00 - 15:50 in ICT 217

Instructor	Email	Phone	Office	Hours
Dr. Amanda Musgrove	amanda.musgrove@ucalgary.ca	--	SA 144F	TBA (see D2L)
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA

Coordinator(s)

Name	Email	Phone	Office	Hours
Dr. Julie Lefebvre	jlefebv@ucalgary.ca	(email preferred)	EEEL 237C	TBA

In Person Delivery Details:

Lectures and tutorials will be combined into **weekly 2h in-person workshops**. During each workshop, students will be working in groups of four to review and apply the content of the asynchronous material available on D2L.

Workshops will be assessed either individually or as a group. Group assessments will always be submitted in-class, by the end of the workshop. Individual assessments may include in-class or out-of-class components such as a post-workshop assignment; details will be posted to D2L at least one week prior to the workshop. Refer to Section 3 below or the D2L website for more details about the grading of these assessments.

Labs will be offered in-person on a biweekly basis. Post-lab assignments will be submitted online within 72h of completing the in-person lab activity. Consult your student center for the complete schedule. Please contact the lab coordinator if you have lab related questions:

Lab Coordinator: Dr. Roxanne Jackson, rjjackso@ucalgary.ca

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#). **Online Delivery Details:**

This course does not follow a scheduled meeting pattern.

Every week, asynchronous material (pre-recorded videos, reading assignments and/or practice questions) will be made available on D2L. Students are responsible for completing the work before attending their weekly scheduled workshop. Refer to the D2L checklists for more information.

Course Site:

D2L: CHEM 209 - ALL- (Fall 2021) -General Chemistry For Engineers

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) and admission to the Schulich School of Engineering.

Antirequisite(s):

Credit for Chemistry 209 and any of 201, 203, 211, 213 and 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 %	Date
Laboratories (5)	25 %	Biweekly. <i>See D2L for the full schedule.</i>
Workshops	27 %	4 group assessments (top 3 graded, each worth 4%); 4 individual assessments (top 3 graded, each worth 5%). <i>See D2L for more details</i>
Wrap-up Assignment	8 %	Due on December 8th at 5pm (MST).
Midterm examination	15 %	October 19th, 9-11am
Final examination	25 %	<i>TBD - scheduled by the Registrar</i>

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 will have a final exam that will be scheduled by the Registrar. [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 achieve the prerequisite requirements (i.e., C-), a student must meet ALL of the following requirements:

1. Attend AND submit reports for a minimum of 3 of the 5 laboratory exercises **and**
2. Achieve a minimum 50% in the laboratory component **and**
3. Achieve a minimum 50% in the workshop component **and**
4. Achieve a minimum 50% weighted average on the examinations (Midterm and Final).

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:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness 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. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

There is **no deferred midterm**. If you are unable to write your midterm exam during the scheduled time, notify the Engineering Student Center (engg.assessment@ucalgary.ca) either **10 business days in advance** for scheduled absences or course conflicts, or **within 48h of the missed exam** for emergency absences. The weight of the legitimately missed exam will be shifted to the final exam.

For **laboratory experiments** that will be or have been missed, use the form linked on the course D2L to notify the Coordinator of your absence (*do not email*) either **10 business days in advance** for scheduled absences, or **within 48h of the missed experiment** for emergency absences. If there is an extenuating circumstance, a make-up session or adjusted due date may be scheduled, at the discretion of the Coordinator, and if timing allows. If these options are not possible, the missed experiment may be pro-rated towards other lab components at the coordinator's discretion. Lab reports may not be submitted without attending the corresponding in-person laboratory session, unless by special written permission of the lab coordinator.

Overdue or missed workshop assessments will be automatically dropped as the lowest grade(s) in this category, since only the top 3 group assessments (out of 4) and the top 3 individual assessments (out of 4) will be counted towards a student's overall grade. If you are experiencing extenuating circumstances preventing you from completing a significant number of workshop assessments (e.g. extended illness, etc.), reach out to the Engineering Student Center (engg.assessment@ucalgary.ca) to discuss your situation.

5. Scheduled Out-of-Class Activities:

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

Activity	Location	Date and Time	Duration
Midterm	On-Campus, room to be announced	Tuesday, October 19, 2021 at 9:00 am	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:

The **online textbook** can be found here (*free of charge*):

<https://wpsites.ucalgary.ca/chem-textbook/table-of-contents-chem-209/>

Top Hat will be used for online practice problems as well as during the workshops to gather student feedback. Participation is optional but highly recommended. Access to Top Hat is free for University of Calgary students. More details will be provided on the D2L course website.

Specific software requirements for this course:

To complete the workshops and lab activities, you will need access to:

- **Office 365 suite:** (Available to all UofC students at no additional cost)
- **OneNote** - for accessing notes and assignments.
- **Excel** - full version: not iOS, Android, or web version - or equivalent software - for laboratory activities.
- **Word** - or equivalent word processor for completing laboratory activities.
- **PDF viewer** (e.g. Acrobat Reader, Nitro Reader). Preview (on Mac) or in-browser reader is not sufficient.
- A **scanner or phone app** that can save documents/photos as PDF (e.g. OneDrive app).

Other REQUIRED materials (available from the bookstore):

- lab coat & safety glasses
- non-programmable scientific calculator (such as Casio FX 260 or equivalent)

General university requirements:

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:

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 a non-programmable scientific calculator. No aids are allowed on tests or examinations.

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 9th, 2021).

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.

- 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
- 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:

- 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](#)).
- SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel: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 (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **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](#)
[Research Integrity Policy](#)

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

e. **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 Dr. Yuen-Ying Carpenter by email yyscarpe@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **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.
- g. **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.
- h. **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.
- i. **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. **Labs.** In addition to the workshop component of the course, students are scheduled for five laboratory experiments (see the course syllabus or D2L website for a detailed schedule). **You must attend your assigned**

laboratory time slot, unless you have been given permission by the coordinator to attend a different section.

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 lab manual can be found online (course D2L site). Details on how to prepare for the labs and how each lab will be assessed can be found online (course D2L site).

Students who previously completed labs **in-person** and are repeating the course within the last three years can be exempted from the Laboratory Component of the course if a grade of **75% or higher** was obtained on the lab portion. Students choosing to exempt from the lab should be aware that,

- the new labs in Fall 2021 may be significantly 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 their course instructor or 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 contact the Undergraduate Science Center (science.advising@ucalgary.ca) **no later than Monday September 13th 2021** to apply. Students registering in the course after this date should contact the USC as soon as possible if they wish to apply for an exemption.

Note: Online labs completed in the Fall 2020-Winter 2021 academic year are not eligible for use as a lab exemption in the in-person Fall 2021 term.

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:

- Identify factors that affect reaction rate, depict reaction rate with symbols, and explain rates at the molecular level
- Identify factors that affect reaction extent, depict reaction extent with symbols, and explain extent at the molecular level
- Recognize how different reactions behave for key examples of acids & bases, solubility, electrochemistry
- Connect atomic and chemical properties with the electronic structure of atoms, molecules, and ions and between these species
- Develop an appreciation for why these aspects of chemistry are important to engineers
- Apply good laboratory practice

Electronically Approved - Sep 04 2021 19:31

Department Approval

Electronically Approved - Sep 22 2021 16:17

Associate Dean's Approval