



## COURSE OUTLINE

### 1. **Course:** CHEM 201, General Chemistry: Structure and Bonding - Winter 2024

#### Coordinator(s)

Name	Email	Phone	Office	Hours
Dr Yuen-ying Carpenter	yyscarpe@ucalgary.ca (email preferred)		EEEL 237B	See D2L
Dr Vivian Mozol	vjmozol@ucalgary.ca		SA 144E	TBA

#### Section(s)

Lecture 01 : MWF 14:00 - 14:50 in ICT 102

Instructor	Email	Phone	Office	Hours
Dr Vivian Mozol	vjmozol@ucalgary.ca		SA 144E	TBA

Lecture 02 : TR 08:00 - 09:15 in ENG 60

Instructor	Email	Phone	Office	Hours
Dr Chang-Chun Ling	ccling@ucalgary.ca	403 220-2768	SB 235	TBA

Dr. Vivian Mozol is **course/tutorial coordinator**. Dr. Yuen-Ying Carpenter is the **laboratory coordinator**.

*The Tutorial activities and Lab Experiments will alternate on a weekly basis, except for the week of Term Break (February 19th-23rd). Please see the calendar in the course syllabus posted in D2L for the weekly schedule & your Student Centre for the exact location and time of your lab or tutorial session.*

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:

The learning outcomes for the course will be delivered in-person. The learning objectives, and a class calendar outlining which learning objectives are covered each week, can be found within the Syllabus for the course posted on the D2L website. Students will be assessed on their understandings of the course content via the following course components:

**Lecture.** In-person Lectures begin on Monday January 8th, 2024. Lectures will occur weekly on Monday Wednesday, and Friday at 2:00 - 2:50 p.m. for L01 and on Tuesday and Thursday at 8:00 - 9:45 a.m. for L02. When appropriate, students will work in unstructured groups. Both sections will formatively check understanding periodically through in-class discussions and polling.

Though there are different lecturers listed for each section, both lecture sections will cover the same material and be assessed using the same exams (Midterm and Final). Each section will have their own D2L webpage on which instructors will post materials relevant to classes specific to the section they teach as needed.

**Tutorials.** In-person Tutorials begin on January 16th, 2024. Students will conduct five bi-weekly tutorial activities, as scheduled in your Student Centre. Tutorials will be worth 20% of the course grade. For details on the grading of tutorial activities, see Section 3.

**Labs.** Lab Activities begin on January 8th, 2024. There are six bi-weekly activities. Week 1 (Lab 0) is online and self-paced; **all remaining lab weeks (Labs 1-5) are in-person experiments**, as scheduled in your Student Centre. Experiments will be worth 25% of the course grade. For details on the grading of lab experiments, see Section 3.

#### Course Site:

D2L: CHEM 201 ALL Lectures - (Fall 2023) - General Chemistry: Structure and Bonding

**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](mailto: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 201 and any of 209, 211, 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 component <sup>1</sup>	25%	Ongoing		
Tutorial component <sup>2</sup>	20%	Ongoing		
Midterm Exam	20%	Mar 08 2024 at 06:30 pm (2 Hours)	in-person	TBD
Registrar Scheduled Final Exam	35%	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

<sup>1</sup> As noted in Section 1, labs alternate biweekly, including 1 online lab week and 5 in-person lab weeks. 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.

<sup>2</sup> There are five tutorial activities each worth 4% of the overall course grade.

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
<b>Minimum % Required</b>	95.00 %	87.00 %	82.00 %	77.00%	72.00%	66.00 %	62.00 %	58.00%	54.00%	50.00 %	45.00 %

This course will have a Registrar Scheduled Final exam that will be delivered on-line. [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 hours.

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

**Completion** of a meaningful portion of the course activities, by...

1. Completing at least of 3 of the 5 tutorial activities, and,
2. Attending and submitting at least of 3 of the 5 in-person laboratory activities

AND meaningful **assessment** of mastery of the material, by earning...

3. An average score of at least 50% on the tutorials, and,
4. A weighted average score of at least 50% on the laboratories, and,
5. A weighted average score of at least 50% on the midterm and final exams.

Therefore, if **ANY** of the above five criteria are not met a maximum grade of D+ will result.

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.

**There will be no deferred midterm.** If a student is unable to attend the midterm then the 20% of the course grade assigned to the midterm exam will be pro-rated to the final exam.

**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 and at most two of the tutorial activities** in this course could be excused in extenuating circumstances. The weight for any excused absence in labs or tutorials will be prorated towards other submitted work within that course component.

- *If ongoing extenuating circumstances may prevent a student from meeting the minimum attendance requirement in either labs or tutorials, it is recommended that they meet with the course and/or lab coordinator as soon as possible to discuss what options may be in the best interest of the student's long-term learning.*

#### 5. Scheduled Out-of-Class Activities:

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

Activity	Location	Date and Time	Duration
Midterm Exam	TBA	Friday, March 8, 2024 at 6:30 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:

##### Important note about your textbook:

- Our recommended texts are open-educational resources, freely available online. The primary resource is our own Department of Chemistry Textbook: <https://chem-textbook.ucalgary.ca/> that will also be available within D2L. It is a modified version of the OpenStax open-educational resource.

##### Recommended resource so instructor can monitor class progress:

- TopHat may be used by your instructor to monitor class progress. Access to TopHat is free for registered students. Details regarding registration of TopHat are found in D2L.

##### Other Recommended Course Materials

- A Model Kit is recommended but not required. (Molymod kits are suggested and are available through the University of Calgary Bookstore).

##### 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:

Any student with academic accommodations must be registered with Student Accessibility Services (see Section 12(e) below), and must identify themselves to their instructor as soon as possible.

Both lecture sections will write the Midterm and Final Exams at the same time. Detailed exam regulations for these **individual** assessments will be provided roughly one week before each examination. The Final Exam date is yet to be announced by the registrar. So that students may make suitable accommodations in their work or social schedule, the Midterm Exam is out-of-class and scheduled for Friday March 1st, 2024 from 6:30-8:30pm.

It is expected that the Midterm Exam will cover all material introduced during lecture up to the end of the day that precedes the Examination date (Thursday February 29th, 2024). The Final Exam will be cumulative, covering material from the entire semester.

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:

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.

- 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](#)).

- b. **SU Wellness Services:** For more information, see their [website](#) 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 ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel: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](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca), [science3@su.ucalgary.ca](mailto: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](mailto: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. In addition to the Lecture component of the course, students are scheduled for a Tutorial and a Lab Component. You must attend your assigned tutorial and laboratory time slots unless you have been given written permission by the course and/or laboratory coordinator to do otherwise.

- o. **Tutorial:** Tutorial activities will begin the week of January 15th, 2024. The exact room location and time can be found via your Student Centre. There are five activities each worth 4% of your final grade. Attendance for two of the five activities could be excused in extenuating circumstances (see section 4. of this course outline regarding Missed Work). The overall average grade obtained for the Tutorial component of the course must be 50% to be eligible for a pre-requisite pass for the

course (see Section 3). Details for each activity are posted in D2L the week prior to the activity.

- **Lab:** Biweekly activities include **1 online, self-paced lab** (Lab 0, week of January 8) and **five in-person, scheduled labs** (Labs 1-5). In-person labs begin the week of January 22 at the time and room specified in your Student Center. Additional details on the activities for each laboratory week activity are posted in D2L.
  - **Laboratory 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 obtained an overall lab grade of 75% or higher was obtained. Students opting to exempt from the lab should be aware that...
    - they must still complete the tutorial component of the course;
    - the material covered in the lab will be integrated into other course assessments such as the Midterm and Final exams; and,
    - the overall lab grade achieved on the previous attempt will be carried forward (for 25% of the overall course grade).
  - It is **strongly recommended**, therefore, that students do not apply for exemption and instead complete all lab activities, to best support their overall understanding of the course material.
    - Prior to applying for an exemption, students are encouraged to connect with the course coordinator to better understand the risks and benefits of an exemption, 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 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 201, 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 8, 2024**). 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:

- OBSERVATION/ANALYSIS: Collect and analyze observations related to experiential chemical activities.
- ATOMS; Use the quantum theory description of the energy and spatial distribution of electrons to correlate the physical properties of atoms with how atoms interact
- CHEMICAL SPECIES; Generate Lewis & VSEPR diagrams and use bonding theories to describe and evaluate the connectivity between atoms and spatial arrangement of bonding in a chemical species
- COLLECTIONS OF CHEMICAL SPECIES; Identify the charge distribution in a chemical species and use it to illustrate how collections of chemical species will interact with each other physically and chemically.

Electronically Approved - Jan 05 2024 14:46

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#### Department Approval

Electronically Approved - Jan 05 2024 16:34

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#### Associate Dean's Approval