UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Chemistry
Science B 605
403 220-5385
chem.info@ucalgary.ca

COURSE OUTLINE

1. **Course:** CHEM 201, General Chemistry: Structure and Bonding - Fall 2022

Coordinator(s)

Name	Email	Phone	Office	Hours
Dr Vivian Mozol	vjmozol@ucalgary.ca		SA 144E	Please see D2L
Dr. Erin Sullivan	ersulliv@ucalgary.ca	403 220-6913	SA 144D	please see D2L

Section(s)

Lecture 01 : MWF 11:00 - 11:50 in ST 148

Instructor	Email	Phone	Office	Hours

Lecture 02 : TR 09:30 - 10:45 in ST 148

Instructor	Email	Phone	Office	Hours

Dr. Vivian Mozol is the **lecturer** and **course/tutorial coordinator**. Dr. Erin Sullivan is the **Laboratory coordinator**.

The Tutorial activities and Lab Experiments will alternate on a weekly basis, except for the week of Term Break (November 7th-11th, 2022). 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 September 6th, 2022. Lectures will occur weekly on Monday Wednesday, and Friday at 11:00 - 11:50 p.m. for L01 and on Tuesday and Thursday at 9:30 - 10:45 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.

Tutorials. In-person Tutorials begin September 13th, 2022. Students will conduct five bi-weekly tutorial activities, as scheduled in your Student Centre. Tutorials will be worth 25% of the course grade. For details on the grading of tutorial activities, see Section 3.

Labs. In-person Labs begin on September 20th, 2022. There are five bi-weekly 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. An online Safety Course must be completed prior to attending any Laboratory session, see Section 13.

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.

Course Site:

D2L: CHEM 201 L01 and L02 - (Fall 2022) - 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)

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 201 and any of 209, 211 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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Lab component[1]	25%	Ongoing		
Tutorial component[2]	25%	Ongoing		
Midterm Exam	15%	Oct 21 2022 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

[1] There are five lab sessions. The first is an orientation laboratory worth 3%. The remaining are 4 laboratory experiments worth 5.5% each.

[2] There are five tutorial activities each worth 5% 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
Minimum % Required	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 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 achieve the prerequisite requirements (i.e. C-) for future Science courses, a student must meet **ALL** of the following requirements:

1) Achieve a minimum AVERAGE grade of 50% on the tutorial component for the course and

2) Complete a minimum of 3 of the 5 tutorial activities (to reflect meaningful completion of course activities) and

3) Achieve a minimum AVERAGE grade of 50% on the laboratory component for the course and

4) Complete a minimum of 3 of the 5 in-person laboratory activities (the orientation and the four experiments; to reflect meaningful completion of course activities) and

5) Achieve a minimum grade of 50% on the WEIGHTED AVERAGE of the Midterm and Final Exams.

Therefore, if **ANY** of the above five 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:**

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 will be no deferred midterms. If a student is unable to attend the midterm then the 15% of the course grade assigned to the midterm exam will be pro-rated to the final exam.

Attendance for at most two of the lab activities and at most two of the tutorial activities in this course could be excused in extenuating circumstances. If ongoing extenuating circumstances may prevent a student from meeting this minimum, 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, October 21, 2022 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://wpsites.ucalgary.ca/chem-textbook/ 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).

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. The Midterm Exam is out-of-class and scheduled for October 21st, 2022 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 (October 20th, 2022). 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.

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. **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

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 Associate Head, Undergraduate by email ahugchem@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 (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.

g. **Student Union Information:** SU contact, Email SU Science Rep: sciencerep1@su.ucalgary.ca, Student Ombudsman

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. In addition to the Lecture component of the course, students are scheduled for a Tutorial and 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.

- **Lab:** In-person Laboratory activities will begin September 20th, 2022. The exact room location and time can be found via your Student Centre. There are six weeks allotted to these activities. To attend your first Laboratory session you must first complete the Department of Chemistry's Online Safety Training Course (see section 14 of this course outline). You will then attend one orientation lab and four experimental labs. The orientation lab occurs the week of September 19th and is worth 3% of your final grade. The remaining four experiments are each worth 5.5% of your final grade. Attendance and submission of work for two of the five in-person Lab activities could be excused in extenuating circumstances (see section 4. of this course outline regarding Missed Work). The overall average grade obtained for the Lab 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.
- **Exemption from the entire Laboratory Component:** The Video-centered lab activities in previous online versions of this course are most similar to the experiments performed in this course. Students repeating the course within the last three years can, therefore, potentially be exempted from the lab component of the course (25% of the course grade).
- Exemption requires that a grade of 75% or higher was obtained on the video-centered online lab activities OR the in-person lab activities for the course in the previous attempt. Exempted students are still expected to complete the Tutorial activities in this course, which are similar to the text-centered activities in previous online versions of this course.
  - Students considering a Lab exemption should be aware that content related to the experiments will be examined in the Midterm and Final Exams. It is **strongly recommended**, therefore, that students do not apply for exemption and instead complete all lab activities. If exemption from the lab component of the course is granted, the lab grade achieved on the video-centered activities on the previous attempt for this course will be carried forward and applied to the Lab Component of the course (25% of the course grade).
  - 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 contact the Undergraduate Science Center (science.advising@ucalgary.ca) **no later than Monday September, 12th 2022** 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.
- **Tutorial:** Tutorial activities will begin the week of September 12th, 2022. The exact room location and time can be found via your Student Centre. There are five activities each worth 5% 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.

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 and information on how to access it can be found on the course D2L site. The Safety Course must be completed before the first laboratory experiment. Time as has allotted for you to complete it during your scheduled lab timeslot during the week of September 19th, 2022. You may complete this course on any computer. Students who do not complete the Safety Course will be denied admission to the laboratories (this includes the first in-lab orientation session). While the Safety Course 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:

- 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 - Sep 02 2022 00:35

Department Approval

Electronically Approved - Sep 02 2022 07:59

Associate Dean's Approval