UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Chemistry
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CHEM 502A.1 - RESEARCH IN CHEMISTRY - SPRING 2025, TOPIC: RESEARCH IN CHEMISTRY I

COURSE OUTLINE

The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which include the Blackfoot Confederacy (comprised of the Siksika, the Piikani, and the Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including Chiniki, Bearspaw, and Goodstoney First Nations). The City of Calgary is also home to the Métis Nation of Alberta (Districts 5 and 6).

A. Course Information

1. **Course Coordinator(s)**

Name	*Email*	*Phone*	*Office*	*Student/Office Hours*
Dr George Shimizu	gshimizu@ucalgary.ca	403 220-5347	SB 403	By appt

2. **Lecture Section(s)**

Lab 01 :

Instructor	*Email*	*Phone*	*Office*	*Student/Office Hours*
Dr Chang-Chun Ling	ccling@ucalgary.ca	403 220-2768	SB 235	TBA
Dr Hans Osthoff	hosthoff@ucalgary.ca	403 220-8689	SB 205	TBA

3. **Lab and Tutorial Sections**

Lab 01

4. **Scheduled Out-Of-Class Activities**

There are no scheduled out of class activities for this course.

5. **Additional Course Delivery Details**

No additional delivery details were found for this course.

6. **Course Site & Materials**

D2L: CHEM 502A.1 L01-(Fall 2024)-Research In Chemistry

Technology:

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. **Approved Mandatory & Optional Course Supplemental Fees**

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

8. **Requisites**

See section 3.5.C in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Consent of the Department.

Note(s):

a. It is recommended that students have completed the third year of their program in Chemistry, Applied Chemistry. MAY BE REPEATED FOR CREDIT

Course Learning
9. **Outcomes**

- Propose a scientific question and frame the direction of research inquiry in the context of the relevant background and literature by writing a concise proposal.
- Perform research in accordance with appropriate professional norms, such as lab safety and applied relevant training.
- Search for scientific information using a wide range of library skills, properly documented those sources, read scientific papers and identify key concepts.
- Establish advanced time management skills required to plan and complete a research project.
- Perform original research in a specific field of chemistry at an advanced skill level.
- Analyze and interprete scientific results and then communicate to a broad chemistry audience the findings by writing a final thesis in a format appropriate for the specific area of study and delivering an oral or poster presentation.
- Develop an understanding of possible professional career paths including summer research jobs and graduate school, and practice appropriate skills to use for applications, interviews, and networking opportunities.

B. Assessment and Evaluation Information

1. **Assessment Components**

The University policy on grading and related matters is described in F.1and F.2 of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component	Weight	Due Date	Modality	Location
Research Work [1]	25%	Ongoing		
Select Committee Member	0%	May 21 2025		
Written literature review [2]	10%	May 30 2025		
Research Progress Meeting [3]	20%	Jun 27 2025		
Final Oral Presentation [4]	20%	Aug 12 2025		
Written Report [5]	25%	Aug 18 2025		

[1] Students are graded in this component of Chemistry 502 by their supervisor on the basis of their time commitment, their enthusiasm, their ability to work independently, particularly as the project evolves, their creativity and other contributions to the project and their overall research skills.

[2] A 10 page summary of the prior published literature and the relevant research carried out in your group, as well as a section concerning your goals and how these relate to past work, due by Friday, May 30, 2025. Three copies are required: One for your supervisor, one for your Committee member, one for the Course Coordinator.

[3] A meeting must be held between yourself, your supervisor, your committee member and the course coordinator to assess your progress during the first semester. These meetings will be held by Friday, June 27, 2025. During this meeting a brief progress report must be given in the form of a 15-20 minute talk. This should include a clear indication of the objectives of your research project and a description of what you have done and what you have observed to date. Also, a brief description of the work you plan to carry out in the remaining weeks should be provided. You should then be prepared to discuss your work with your committee members. You will be assigned a grade based on the first semester's work at this point by the faculty members present. Criteria used to arrive at this assessment will be your level of industry, presentation of the chemistry, ability to talk about your results and the quality of the results obtained.

[4] The oral presentation will be made by Tuesday, August 12, 2025. The presentation should be approximately 30 to 40 minutes in length and it will be followed by a discussion period. Only ONE hour should be taken in total for the presentation plus question period. Students will be evaluated on the following: (i) Organization of material (ii) Clarity of the presentation (iii) Quality of slides, transparencies or other aids (iv) Conclusions (v) Handling of questions and discussion

[5] A written report should be submitted to the course coordinator, your supervisor and the other member of your committee by Monday, August 18, 2025. The report must be in typed form (double spaced and appropriately indented) and all figures and tables must be clearly and carefully drafted. The report should be written in the style of a paper for a scientific journal, but perhaps be somewhat more detailed. In terms of format, you will be required to download the "Instructions to Authors" for the ACS Journal most suited for your work and follow them explicitly in writing your report. The Final Report is a key component of the course and should be considered to be similar to a Final Examination. It MUST be handed in by the prescribed date or you will lose marks (10% deducted, for each day's delay). Please consult the course coordinator if you have any questions regarding any of the above. It may be useful to examine previous Chemistry 502 reports in order to gauge the general layout, length and style.

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.

Assessment &
2. **Grading**

Reappraisal of Graded Term Work and Final Grades:

See Section I of the University Calendar and https://science.ucalgary.ca/current-students/undergraduate/program-advising/grade-reappraisals-and-appeals .

3. **Examination Policy**

No aids are allowed on tests or examinations.

Students may use artificial intelligence tools for idea generation or editing the language of the report and/or presentation, but the final submitted assignment(s) must be original work produced by the student. Learners are ultimately accountable for the work they submit. Use of AI tools must be documented in an appendix for each assignment. The documentation should include what tool(s) were used, how they were used, and how the results from the AI were incorporated into the submitted work. Failure to cite the use of AI generated content in an assignment/assessment will be considered a breach of academic integrity and subject to Academic Misconduct procedures.

See also Section G of the Calendar, on Academic Assessments and Examinations.

4. **Missed Components of Term Work**

In the event of exceptional circumstances (e.g., hospitalization), please reach out to your instructor and the course coordinator as soon as possible to discuss options for support and possible alternate arrangements which may include reweighing of the course components and/or deadline extensions.

See also Sections G2.3 and M.1.1 of the Calendar, on Absence from In Course Assessments and Supporting Documentation for Absences.

5. **Letter Grade Conversion**

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 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

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/undergraduate-processes

C. Course Policies & Procedures

1. **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, Amanda Musgrove (amanda.musgrove@ucalgary.ca)

2. **Course Communication**

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

3. **Academic Integrity and 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
Policy and Procedure for Student Academic Misconduct
Faculty of Science Academic Misconduct Process
Research Integrity Policy

Additional information is available on the Student Success Centre Academic Integrity page

4. **Acceptable & Prohibited Tools and Resources**

This is a research-group specific course and so access to standard tools required for research in the group is expected. Presentations may make us of visual support media. Students may use artificial intelligence tools for idea generation or editing the language of the report and/or presentation, but the final submitted assignment(s) must be original work produced by the student. Learners are ultimately accountable for the work they submit. Use of AI tools must be documented in an appendix for each assignment. The documentation should include what tool(s) were used, how they were used, and how the results from the AI were incorporated into the submitted work. Failure to cite the use of AI generated content in an assignment/assessment will be considered a breach of academic integrity and subject to Academic Misconduct procedures.

5. **Writing Across the Curriculum**

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The University supports the belief that throughout their University careers, students should be taught how to write well so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their University courses and, where appropriate, members of faculty can and should use writing and the grading thereof as a factor in the evaluation of student work. The services provided by the Writing Support , part of the Student Success Centre, can be utilized by all undergraduate and graduate students who feel they require further assistance. See also Section E.2 of the University Calendar.

6. **Academic Accommodations**

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 Accommodation in Academic Courses Form and sending by email to science@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

7. **Instructor Intellectual Property.**

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy) and requirements of the copyright act (laws-lois.justice.gc.ca/eng/acts/C-42/index.html) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

8. **Recording of Lecture**

Audio recording of lectures, other than where an audio recording is an accommodation, shall be permitted for individual private study only at the discretion of the instructor. For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed. Any use other than that described above constitutes academic misconduct and may result in suspension or expulsion. For more information, see Section E.6 Recording of Lectures of the University Calendar.

9. **Freedom of Information & 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.

10. **Human & Living Organism Studies Statements**

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

See also Section E.5 of the University Calendar.

D. Copyright Legislation

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.

E. Support & Resources

Student well-being and safety resources that are not course-specific can be found on the Office of the Registrar's website:
https://www.ucalgary.ca/registrar/registration/course-outlines

Electronically Approved - May 02 2025 17:27

Department Approval