

**Chemistry 4000 8.0 Research Project**  
**Fall/Winter 2024/25**

**Course Director:** Dr. Thomas Baumgartner, LSB 431B  
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**Course description:**

This course is a hands-on original research project (laboratory-based) that includes a practical and written component as well as an oral presentation and exam. This course provides 4th year undergraduate students with invaluable research experience in the Chemical Sciences and provides an opportunity to enhance critical thinking, analytical and communication skills. The research project involves a significant investment of time and effort in the laboratory. Typically, students spend a minimum of 10-12 hours/week (although this is likely to depend on the nature and stage of the work) over the Fall and Winter terms. You need to complete all components of the course to receive a passing grade, which includes the Oral Presentation and Oral Exam.

<b>Course Evaluation:</b>	Supervisor's Assessment	40%
	Written Thesis	25%
	Oral Presentation & Exam	30%
	Course Director (participation mark)	5%
	<b>Total</b>	<b>100%</b>

**NOTE:** You will only receive an overall letter grade, the above breakdown is to give you a general idea of where your grade comes from.

**Logistics:**

CHEM 4000 is held in-person, allowing you to perform the research on campus, as required for your individual project. There will also be a series of supplementary in-class professional development meetings as a group with the Course Director (CD) in CB237.

**In-Class meetings, Mondays, 17:30h (CB 237) and Deadlines:**

\*Please note that dates/times could be amended to accommodate everyone's schedules during the orientation meeting

**September 9, 2024** Orientation meeting on general requirements and expectations

**September 23, 2024** Best lab book keeping practices

**September 30, 2024** John Dupuis (Steacie Library) - Library resources and approaches to literature search

**October 7, 2024** Kathryn Allyn (Bethune) - What support does the Bethune Writing Centre offer?

- November 4, 2024** Thesis Project Summary Due (submitted to the CD)
- November 4, 2024** Ryan Hili (Graduate Program Director) What to expect for graduate studies in Chemistry; and research progress (round table discussion)
- November 18, 2024** Courtney Cole & Joseph Turcotte (Innovation York)  
What is Intellectual Property and why should you care about it?
- November 25, 2024** Meeting to go over the elements of a good presentation
- Late Jan, early Feb** CHEM 4000 Progress Presentations (5-10 minutes each)
- February 3, 2025** Draft of Thesis Introduction Due (submitted to the CD)
- March 7, 2025** Identify your two (2) Examiners (let CD know by email)
- Important:** the committee members must be faculty whose primary appointment is in Chemistry. Other faculty members within the *Faculty of Science* may be considered but must be approved by the CD.
- March (?), 2025** Southern Ontario Undergraduate Student Chemistry Conference, (SOUSCC 2025; participation optional)
- March 31, 2025** Meeting to go over the elements of a good presentation, oral exam, as well as talk practice talk (optional).
- April 1 to 4, 2025** Latest Date to Submit Draft Thesis to your supervisor for feedback.
- April 14 to 17, 2025** Final Thesis is due to your committee and CD as a PDF file (submitted by email). Note that the Thesis should be submitted a week before your scheduled exam.
- April 22 to 25, 2025** CHEM 4000 Presentations and Oral Exams

### Notes Regarding Evaluations:

Supervisor's Assessment: This covers your work throughout the terms (40% of your final grade). It includes such things as your interaction with the research group, your efforts in the lab (not necessarily results), laboratory note keeping (lab book), critical thinking, etc. It also includes your thesis first draft, presentation and oral examination practice.

The Written Thesis: Your two examiners provide an assessment of your written thesis itself, which are averaged to make up this component of your evaluation (25%). Important considerations in the thesis can include (among others): How it frames the research project and your objectives, outlining of your methods, presentation of the data/results and its discussion, indication of future directions, figures/tables, references etc.

Presentation & Exam: This grade given by your examiners (15% for the presentation and 15% for the oral examination), which provide a common mark on how well you present your data, answer questions, think critically etc.  
TO PASS THE COURSE THIS COMPONENT NEEDS TO BE COMPLETED.

The Course Director: This component (5%) takes into account your participation in in-class activities and organizational matters in the course. Marks are deducted for the late submission of required components in the course (Summary, Introduction, Final thesis etc.). The submission deadline for all items to the CD, your examiners etc. is 5 pm on the due date.

**In-Class Meetings:** There will be ca. 8-9 in-class meetings held this term; a schedule is provided above. These meetings will cover some materials to support your research project and your professional development. These meetings will also cover organizational matters, and allow for discussion regarding the composition/organization of the thesis report, the research presentation, etc.

**Email Policy:** Please include “CHEM 4000” in the subject line of all emails. The CD will also from time to time send out emails with regard to organizational matters pertaining to the course or post announcement on the Course Moodle page.

## General Guidelines

### The Project Summary

- The summary should be ~1 page in length. It should include a brief statement of what your planned research will be (or is).
- It *should* contain a statement of how your research fits into the bigger picture, its importance and relevance to the field of research, a brief summary of the current literature, your research plan. Make sure to submit a draft of the summary to your supervisor for feedback prior to submitting it to the CD.

### Progress Presentations

- A 5-10 minute presentation of your research progress. Final results are not expected at this point. You can introduce your topic, list objectives, outline successes, difficulties, data you have acquired, results, etc.

### Identifying Your Examination Committee

- Your examination committee will consist of your supervisor, the course director, and two (2) additional faculty examiners
- The examiners must be faculty whose primary appointment is in Chemistry (see the Department [website](#) for eligible members) and who can effectively evaluate your research area. Other faculty members within the *Faculty of Science* may be considered but must be approved by the CD.
- It is up to you, the student, to ask faculty members if they are willing to be on your examination committee. Talk it over with your supervisor, but you must do the asking.

### The Final Thesis

- Your final thesis is a short, 25-40 page (double paced, page 1 starting with the introduction) written report of your research. It should include a cover page, an abstract, table of contents, list of symbols (if appropriate), list of acronyms (if appropriate), list of figures, introduction, objectives, experimental methods, results, discussion, conclusion and future work.
- Your thesis should be submitted as a high-quality PDF to the CD and the examiners with the option for them to request a printed copy if needed.
- Samples of previous theses can often be found with current lab members to be used as examples of how to put the thesis together.

## Oral Presentations and Exams

- You will be required to give a 15-18 minute (leave 2-5 minutes for questions for a total of 20 minutes) public presentation of your research. You should prepare your presentation in Power Point or other appropriate computer software (i.e. Open Office). Computer projection will be supplied. Some notes on organization of your presentation are below.
- The oral examinations will be 30 minutes in length, at which time your examiners will ask you questions about your research and written thesis. The schedule for presentations and exams will be announced one week before the oral date.

## Organizing Your Research Presentation

Research presentations are to be 20 minutes in length, with 15-18 minutes for your presentation and 2-5 minutes for questions. At 1 – 1.5 minutes per slide, **you are looking at ~12 slides in 12-18 minutes.**

Practice is the key to deliver a good presentation!

A sample format of your organization could look like:

- Title Slide (Title, authors, institution) - This is very important!
- Introduction (2-3 slides) – use these slides to provide a background for your work
- Research Goals – What are the specific goals of *your* research project
- Experimental (1-2 slides) – Give an overview of the methods you employed in your research
- Results (1-5 slides) – Use appropriate titles on the slides to highlight your research results. Note here that you can in some cases meld these slides with the experimental slides
- Conclusions and Future Work – What did your research show, and where do *you* think it should go next
- Acknowledgements – Also a very important slide...you did not do your research in isolation, so you should thank the people that helped

## Academic Honesty and Integrity

Academic misconduct undermines the values of honesty, trust, respect, fairness, and responsibility that we expect in this class. York University provides supports such as academic integrity workshops to ensure that all students understand the norms and standards of academic integrity that we expect you to uphold.

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards. Please review and familiarize yourself with the policy.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve your research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website:

### Examples of actions that do not adhere to York's Academic Integrity Policy include:

- Plagiarism (passing off someone else's work as your own)
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams
- Uploading work to third party repository sites (e.g., Course Hero, One Class, etc.)
- Scanning, sharing, uploading, or publishing exams, tests, or scholarly work

For more information on what academic integrity is and why it is important see:

<https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>. Information on the process of investigations into breaches of academic honesty: <https://spark.library.yorku.ca/academic-integrity-breach-of-policy-on-academic-honesty/>

**Important Note from the FSc Committee on Examinations & Academic Standards (CEAS):** Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g., Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. Whenever a student submits work obtained through an external site (e.g., Course Hero, Chegg), the **submitting student will be charged with plagiarism** and the **uploading student will be charged with aiding and abetting**. To avoid this risk, students are urged not to upload their work to these sites.

### Assistance for Students (Academic and Well-Being)

**Academic Advising\*:** <https://www.yorku.ca/science/academic-advising/> \* Departments also offer program-specific advising. Check with your Department's Undergraduate Office.

Centre for Human Rights, Equity, and Inclusion: <https://rights.info.yorku.ca>

Centre for Indigenous Students Services: <https://aboriginal.info.yorku.ca/>

**Food Access, Funding, & Supports/Resources:** <https://students.yorku.ca/food>

**Good2Talk 24-hour Ontario Student Helpline:** 1-866-925-5454 /Text: GOOD2TALKON to 686868

**Keep.meSAFE:** <https://myssp.app/keepmesafe/ca/home>

**Learning Commons** (general academic learning supports including library research, time management, study skills, career planning, etc.): <https://learningcommons.yorku.ca/>

**Peer Assisted Study Sessions (PASS):** <https://www.yorku.ca/colleges/bethune/get-help/pass/>

**Peer Tutoring:** <https://www.yorku.ca/colleges/bethune/get-help/peer-tutoring/>

Sexual Violence Response and Support: <https://thecentre.yorku.ca>

Student Counselling, Health & Well-being: <https://counselling.students.yorku.ca/>

**Support Services for International Students:** <https://yorkinternational.yorku.ca/international-student-support/>

**Writing Services:** <https://www.yorku.ca/colleges/bethune/get-help/writing/>

York University Student Services: <https://family.yorku.ca/student-services/#SCD>

York University Student Well-being Resources: <https://www.yorku.ca/well-being/resources/students/>

## **Accessibility**

York University is committed to principles of respect, inclusion, and equality of all persons with accessibility needs across campus. The University provides services for students with accessibility needs (including physical, medical, learning, and psychiatric needs) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

If you are in need of these services, please register with accessibility services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with accessibility services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

**Additional information is available at the following websites:**

**Student Accessibility Services:** <https://accessibility.students.yorku.ca>

**York Accessibility Hub:** <https://www.yorku.ca/accessibilityhub/>

## **Religious Observance Accommodation**

York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course Director immediately. To arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form at least 3 weeks *before the exam period begins*. <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

## **Student and Instructor Conduct in Academic Situations**

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<https://calendars.students.yorku.ca/policies-and-regulations>