



Molecular Science

PhD/MSc

Yeates SCHOOL OF GRADUATE STUDIES

www.ryerson.ca/graduate

**RYERSON
UNIVERSITY**

Everyone Makes a Mark



Ryerson University, 350 Victoria Street
Toronto, ON M5B 2K3 Canada
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Everyone Makes a Mark

Molecular Science

PhD / MSc

The Department of Chemistry and Biology offers an exciting program at the interface of chemical and biological science, leading to a master of science (MSc) or philosophy doctorate (PhD) degree in Molecular Science.

Events at the molecular level are fundamental to scientific and technological innovation. This is the centrepiece of the Molecular Science graduate program, providing students with a rigorous, research-intensive, interdisciplinary education to support careers at the interface of chemistry, biochemistry and biology.

The MSc and PhD degrees in Molecular Science provide two unique interdisciplinary research streams.

The first includes research in the area of Materials, Surfaces and Interfaces which reflects a key area in molecular science. This research stream focuses on the synthesis, analysis and applications of materials, surfaces and interfaces as well as interaction with biological entities.

Molecular Bioscience, the second area of research, embraces a dynamic convergence of biological, chemical and physical sciences including molecular biology, analytical and synthetic organic chemistry, environmental biology, cell biology, genetics, chemistry, molecular retrovirology, and biophysical analysis.



Faculty Areas of Research Expertise

Participating faculty members have wide-ranging research interests, which include:

- Biofilms and Biodegradation
- Synthetic Chemistry (Organic, Inorganic, Polymer)
- Supramolecular Chemistry
- Environmental Chemistry
- Medicinal Chemistry
- Food Science
- Molecular Genetics
- Cell Biology
- Proteomics and BioMarkers
- Emulsion Science and Technology
- Virology and Microbial Pathogenesis
- Developmental Biology
- Biogeochemistry
- Ecotoxicology

Core faculty members are from the Department of Chemistry and Biology with additional members from the Department of Chemical Engineering, the School of Nutrition and the Department of Physics.

All faculty members have excellent research and teaching records and are actively engaged in research supported by agencies such as the Natural Sciences and Engineering Research Council of Canada, Canadian Institutes of Health Research, Ontario Cancer Biomarkers Network, Ontario Ministry of the Environment, Canadian Foundation for Innovation, Advanced Foods and Materials Network and other governmental and not-for-profit sector sources. Funding is also an important component of support for faculty research.

Requirements & Curriculum

MSc Degree Requirements:

- Master's Thesis
- Master's Seminar 1 (Year 1)
- Master's Seminar 2 (Year 2)
- Three one-semester elective courses

PhD Degree Requirements:

- PhD Research Thesis
- PhD Seminar 1 (Year 1)
- PhD Seminar 2 (Year 2)
- PhD Seminar 3 (Year 3) (if required)
- Three one-semester elective courses

MSc Degree Requirements

This program is offered on a full-time basis over a period of two years (six semesters). A candidate would elect to study in one of two fields (Materials, Surfaces and Interfaces or Molecular Bioscience) in the MSc program.

PhD Degree Requirements

To pursue the PhD degree, a candidate would elect to study in one of two fields (Materials, Surfaces and Interfaces or Molecular Bioscience). For students entering with an MSc, the PhD program takes approximately three years to complete. Students who begin in the MSc program and successfully pass the PhD candidacy exam, have at least 12 months of residency in the department and have completed one progress report with their supervisory committee are eligible to transfer to the PhD program. Once transferred, students can expect to take typically between two and three years to complete their PhD.

Both the MSc and PhD in Molecular Science, with study in either the fields of Materials, Surfaces and Interfaces or Molecular Bioscience, are supported by at least eight elective courses.

Admission

Admission requirements for MSc include the following:

- A bachelor of science degree in Biological, Biochemical or Chemical Science with a minimum B average overall and a minimum B+ average in the last two years of study.
- Two letters of recommendation from former instructors or research supervisors.
- A test of English language proficiency, for applicants whose language of instruction during their undergraduate studies was a language other than English.

Admission requirements for PhD with a master's degree include:

- A master of science degree in Molecular Science or a discipline related to molecular science.
- A CGPA of at least B+ in courses credited to the master's degree.
- Three letters of recommendation from academic referees who can judge the candidate's potential to engage in research at the doctoral level.
- Evidence of research potential in the form of a master's thesis or a publication that has appeared in a refereed journal or conference proceeding.

Admission requirements for PhD with a transfer from the Molecular Science master's program include:

- At least 12, but normally no more than 18 months, of their MSc program completed, from date of first registration.
- An overall average of B+ or better on at least two elective graduate courses, plus satisfactory performance in the seminar course including their first presentation.
- A minimum of one research progress meeting completed with the supervisory committee. The student's status, as assessed at the last meeting before applying for the transfer exam must be "satisfactory". In addition, the committee must certify that the student is exhibiting exceptional promise in their research.

English Language Proficiency Requirement

Applicants whose instruction during their undergraduate studies was in a language other than English are required to submit a test of English language proficiency. Applicants may demonstrate facility in English using one of the following methods:

- Test of English as a Foreign Language (TOEFL)
- International English Language Testing System (IELTS)
- Michigan English Language Assessment Battery (MELAB)

Additional Information

For detailed program information, visit www.ryerson.ca/graduate/programs/molecular_science.

Program Contact Information

Telephone: 416-979-5000, ext. 4759

Email: molsci@ryerson.ca

Financial Support

Ryerson University provides financial support in the form of scholarships, awards and assistantships for as many full-time students as possible. Financial support is offered on a competitive basis, and the number of scholarships, awards and assistantships in any given year will vary. For more information on available funding, visit www.ryerson.ca/graduate/funding.

How to Apply

Online application instructions are available at www.ryerson.ca/graduate/admissions.

Yeates School of Graduate Studies

Admissions

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