

Graduate Research Opportunities (Master of Applied Science) in Mine Ventilation and Energy Systems

Location: [Department of Civil and Mineral Engineering, University of Toronto](#)

PI/Advisor: [Minghan Xu](#)

Anticipated start date: September 2026

Position overview

We are seeking two graduate students at the master's level to join the [Mine Energy and Thermal Advancement Lab \(METAL\)](#) in the Department of Civil and Mineral Engineering at the University of Toronto (UofT). Successful applicants will conduct two-year research on one of the following projects:

- **Project 1:** AI-assisted computational fluid dynamics (CFD) modeling of mine ventilation.
- **Project 2:** Sustainable integration of renewable energy (e.g., spray freezing, wind turbines, nuclear reactors) into northern remote mines.

Essential qualifications

- A bachelor's degree in mining, mineral, civil, or mechanical engineering, or a closely related field.
- A minimum CGPA of 3.0/4.0 or 75% in the final year of the undergraduate degree.
- [Project 1] Experience with one or more CFD software (e.g., ANSYS, OpenFOAM).
- [Project 2] Experience with one or more programming languages (e.g., Python, MATLAB).
- Experience in mine ventilation and familiarity with Howden VentSim are assets.

Funding package

The guaranteed funding package is \$30,500 per year for MASc students, including research fellowships. A detailed breakdown of the funding package can be found [here](#). Successful candidates are encouraged to apply for additional scholarships available in Ontario and Canada, such as [Canada Graduate Research Scholarships – Master's Program](#) and [Ontario Graduate Scholarships](#). A full list of scholarships is available through the [School of Graduate Studies at UofT](#).



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Research environment

UofT is Canada's largest university, ranked first in Canada in all 11 subjects tracked by *Times Higher Education's* [World University Rankings by Subject 2025](#). The METAL is part of UofT's world-class research ecosystem, providing access to state-of-the-art laboratory facilities, computational resources, and interdisciplinary collaborations. More information about METAL can be found [here](#).

How to apply

Interested applicants should email their resume, transcripts, and letter of intent to Minghan (minghan.xu@utoronto.ca) with the subject line: **Join METAL – [Your Full Name]**

The positions will be open until filled. Only shortlisted applicants will be contacted. *Applications are open to Canadian citizens and permanent residents for this intake.* We strongly encourage applications from underrepresented groups, including women, Indigenous peoples, persons with disabilities, and members of visible minorities.



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