

Mathematics graduate applications

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Mathematics graduate school, in Canada and elsewhere

What is mathematics graduate school?

- Highest degrees in mathematics.
- Learn how to do research in mathematics.
 - Pure mathematics.
 - Applied mathematics.
 - Math education.
- Necessary for:
 - Academic career (PhD \rightarrow postdoc \rightarrow faculty).
- Helpful for:
 - Some industry careers.
 - Some teaching careers.
 - Some policy careers.

Canada



- MSc (1 years) into PhD (3-4 years) or direct-entry PhD (4-5 years).
- Stipends, supplemented by institutional, NSERC, or provincial fellowships.
- Ask letter writers for suggestions of programs.
- Deadlines in December, application fees.
- Some schools require TOEFL/IELTS tests for international students.

US



- Only direct-entry PhD (5 years).
- Stipend for PhD.
- Large number of universities of varying quality \rightsquigarrow ask letter writers.
- Deadlines in December, application fees.
- Some schools require GRE/GRE Math tests, and TOEFL/IELTS tests for international students.

Europe



- MSc (2 years) completely separate from PhD (3-4 years).
- MSc requires tuition but PhD gets wages.
- Smaller number of universities of uniform quality
~> ask letter writers.
- Nearly all MSc and PhD programs in English.
- Deadlines vary, usually no fees.
- Many special cases, e.g. Oxford & Cambridge.

Other countries?

Incomplete list of places I have seen students go:

- China.
- India.
- Japan.
- Australia & New Zealand.
- Latin America.

Interested in these places \rightsquigarrow ask letter writers.

Typical timeline

- Late September: make list of potential programs and required materials.
- Late September: ask letter writers.
- October and November: create application materials.
- October and November: take GRE/GRE Math/TOEFL/IELTS if required.
- October and November: apply for fellowships/scholarships if applicable.
- Late November, early December: deadlines for Canada/US.
- January and February: first round offers.
- March and April: second round offers.

Materials

Application materials

Always:

- CV.
- Letter of intent.
- 2-4 recommendation letters.
- Transcripts.

Occasionally:

- Cover letter.
- Test results.
- Sample writing.
- Equity & diversity letter.

Recommendation letters

- Arguably most important.
- Better if personal and detailed.
- Ask professors/instructors/mentors you have interacted with personally.
- Meet in person/online to discuss your application.
- Ask them for advice who else to ask and where to apply.
- Think ahead.

What's on a CV?

- Personal information.
- Education history.
- Work history, internships.
- Awards, prizes, scholarships, fellowships.
- Research experience.
- Teaching experience.
- Volunteering or organisational experience.
- Language/computer skills.

CV tips

- Use a template or document class.
- 2-4 pages.
- Ask your letter writers, peers, parents for comments.
- Guideline: what illustrates you will be good at research?

Improving your CV

- Specialist/graduate level courses.
- Reading courses.
- Original research (e.g. summer research, USRA, UTEA).
- Workshops or conferences (e.g. CUMC)
- Volunteering/student organisations.
- Exposition papers or talks (e.g. UTSC undergraduate seminar).
- TAing and internships.
- Mathematics competitions.

Letter of intent

- Explain why you want to do graduate school.
- State interests and who you might want to work with.
- Personal history and future plans.
- Opportunity to explain your strengths.
- Opportunity to explain anything non-standard on CV or transcript.

Letter of intent tips

- 1-2 pages.
- Ask your letter writers, peers, parents for comments.
- Guideline: show that you are well-suited for graduate school:
 - Highlight any relevant research/teaching/volunteering experience.
 - Show you understand what graduate school is.
 - Show mathematical maturity.

University of Toronto



[https://www.mathematics.utoronto.ca/graduate/
prospective-students/
admissions-requirements-procedures](https://www.mathematics.utoronto.ca/graduate/prospective-students/admissions-requirements-procedures)

Example: University of Toronto

- MSc + PhD or direct entry (preference possible but committee decides).
- Recently has become more competitive. International is more competitive than domestic (~ 100 domestic applications, ~ 300 international applications).
- Deadline December 8, 125CAD fee.
- No tests for domestic, English for international.

Pro-tips: University of Toronto

- “Everything matters.” “State which professors you want to work with.”
- Do not pay fee twice (i.e. separately for MSc and direct-entry PhD).
- Do not bother the administrators with updates on your application.
 - Late-December: committee meets.
 - Mid-January: international first round.
 - Early-February: domestic round.
 - March-April: second round (if at all).
- Apply to NSERC-CGS and search for scholarships.
 - NSERC deadline: December 1st.
 - Contact: Elizebath Lamanna (elizabeth.lamanna@utoronto.ca).

Resources

- Your professors.
- Your fellow students.
- *Academic Advising & Career Centre*
<https://www.utsc.utoronto.ca/aacc/>
- *AMS early career* articles
[https://www.ams.org/cgi-bin/notices/amsnotices.pl?article_id=career&article_type=gallery&gallery_type=career.](https://www.ams.org/cgi-bin/notices/amsnotices.pl?article_id=career&article_type=gallery&gallery_type=career)