Mathematics & Engineering, Mathematics & Statistics PhD Map

Applying to and Navigating Graduate Studies
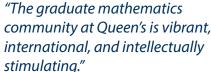
Why **GRADUATE STUDIES** in **MATHEMATICS and STATISTICS?**

A doctoral degree in Mathematics and Statistics is essential for anyone aspiring to a research or academic position, and is very useful for those who want to assume a leadership role in government, business and industry. The Doctor of Philosophy is a research degree, and doctoral studies are an essential step in the preparation of a research scientist.

Why **QUEEN'S?**

Queen's is an ideal place to pursue graduate study in Mathematics and Statistics. We have an outstanding group of faculty researchers who are internationally recognized in their fields of specialization. They represent a wide variety of areas including pure mathematics (number theory, algebra, algebraic geometry, combinatorics, operator algebras, random matrices and dynamical systems), mathematical physics, mathematics applied to engineering (control theory, communication theory), mathematical biology, and both theoretical and applied statistics.

"The graduate mathematics community at Queen's is vibrant, international, and intellectually stimulating."

– John Treilhard, MSc

Program **STRUCTURE**

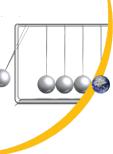Course work, qualifying exams, thesis prospectus exam, and thesis.

RESEARCH Areas

- Algebra and Number Theory
- Analysis, Geometry and Topology
- Applied Mathematics
- Mathematics & Engineering
- Probability and Statistics

We encourage you to identify an area of research interest and contact a potential supervisor before applying.

Visit the **Department of Mathematics and Statistics website** to read **faculty profiles** and learn more about faculty members' research areas. When you find a faculty member with similar research interests to yours, contact him/her and tell them about your interest in graduate work and related experience.

School of Graduate Studies
Create an impact
www.queensu.ca/sgs

Mathematics and Statistics PhD MAP *

DOCTOR OF PHILOSOPHY (PhD)

Queen's UNIVERSITY

	YEAR I	YEAR II	YEAR III	YEAR IV & TRANSITIONING

ACHIEVE YOUR ACADEMIC GOALS

YEAR I
- Key priorities include your relationship with your supervisor and forming your supervisory committee, coursework, preparing for and passing qualifying exams.
- Meet early with your supervisor to set expectations and discuss roles, responsibilities, program requirements, resources, research/occupational goals, timelines, and any required accommodation plans.
- Look to **Student Academic Success Services** for a variety of supports.
- Attend weekly seminars of interest, the Graduate Student seminar, and the departmental **Colloquium**.

YEAR II
- Write and defend your thesis prospectus.
- Embark on your substantive research.
- Find your way through the academic process with help from departmental and **Expanding Horizons** professional development workshops, the department Grad Chair, and the SGS Habitat.
- Continue to attend seminars., and seek experiential/ professional development opportunities.

YEAR III
- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGS **Dissertation Boot Camp** or **Dissertation on the Lake**.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons **Publishing workshop**.
- Begin discussion of potential thesis defence examiners.

YEAR IV & TRANSITIONING
- Plan date of thesis submission for examination.
- Present your research to graduate students and faculty or at conferences and work with supervisor to prepare for defence.
- Review submission and examination guidelines.
- Secure necessary oral defence accommodations.
- Discuss career pathways, references letters, and publication options with your supervisor.

MAXIMIZE RESEARCH IMPACT

YEAR I
- Think about audiences for your research.
- Complete **ROMEO online module** on research ethics if doing research with living people or sensitive topics.
- Apply to NSERC, OGS, and **other funding**.
- Attend conferences in your field.

YEAR II
- Present your work at graduate conferences, through professional associations, or topic conferences.
- Expand your research audience through social media such as Twitter or a blog.
- Apply to external funding agencies if eligible.

YEAR III
- Continue to present at conferences.
- Consider participating in the **3 Minute Thesis (3MT)** competition.
- Contact the **Queen's Media Centre** for guidance on speaking to news outlets about your work. List yourself on the **Arts and Science University Research website**.

YEAR IV & TRANSITIONING
- Continue to attend conferences and connect with scholars in your field and with community partners.
- Continue public outreach through social media and the Queen's Media Centre.

BUILD SKILLS AND EXPERIENCE

YEAR I
- Serve on departmental, faculty or university committees.
- Consider positions in student services, the **SGPS**, or media outlets like the **Queen's Journal**, **CFRC**, and the **SGS Blog**. Look in the **AMS Clubs Directory**.
- Use a Teaching Assistant or Research Assistant position to develop your skills and experience.

YEAR II
- Hone general employment skills by continuing involvement on committees and in the community.
- Start keeping an eportfolio of your skills, experiences and competencies.
- Complete the department's teaching apprenticeship program
- Get support from the **Centre for Teaching and Learning**.

YEAR III
- Find opportunities for extra training through CTL, Expanding Horizons, Mitacs, or other sources to boost your skills. Investigate internships from **Mitacs** and **other sources**.
- Prepare for work or studies in a multi-cultural environment by taking **QUIC's Intercultural Competency Certificate**.
- Apply for teaching as a departmental teaching fellow.

YEAR IV & TRANSITIONING
- Practice articulating the skills you have been developing in settings outside the university, such as casual conversation, networking, and interviews. Get help from a **Career Services workshop**.

ENGAGE WITH YOUR COMMUNITY

YEAR I
- Explore how you can connect with your community through experiential opportunities on- and off-campus.
- Consider volunteering with community organizations such as Math Quest, a math camp for girls.

YEAR II
- Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups like **Material Matters**.

YEAR III
- Do some targeted networking with people working in careers of interest, through **QueensConnects** on LinkedIn, the **Queen's Alumni Association**, professional associations, and at conferences. Get help from a **Career Services workshop**.

YEAR IV & TRANSITIONING
- Consider joining professional associations like the **Canadian Mathematical Society** or the **Canadian Applied and Industrial Mathematics Society.**
- Join groups on LinkedIn reflecting specific careers or topics of interest.

LAUNCH YOUR CAREER

YEAR I
- Finding career fit starts with knowing yourself. Take a **Career Services career planning workshop** or meet with a career counsellor for help. Check out books like *So What Are You Going to do With That?* or *The Academic Job Search* from the **Career Resource Area** for advice on various career options.
- Start reading publications like **University Affairs and the Chronicle of Higher Education**. Browse non-academic labour market websites.
- Stay on the lookout for special events like **Graduate Student Career Week** to explore your career pathways.

YEAR II
- Start building your teaching portfolio including student evaluations, and seeking mentorship.
- Explore different careers of interest by reading **alumni profiles** on the SGS website, and using **QueensConnects** on LinkedIn to connect with Queen's alumni, or find alumni in various careers through "**Ask an Alum**". For more information check out **Career Cruising**.
- Investigate requirements for professional positions or other opportunities related to careers of interest.

YEAR III
- Participate in hiring committees and attend job talks. Research academic careers of interest. Craft your CV and job application materials.
- Start focusing on non-academic areas of interest. Research organizations of interest and start putting together your resume for potential positions of interest.
- Check out the free online modules at **MyGradSkills** to help you plan your career.

YEAR IV & TRANSITIONING
- Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.
- Apply to jobs or make plans for other adventures. Get help from Career Services with **job searching, resumes, or interviews**.
- If considering jobs abroad, research possible immigration regulations. If you are an international student interested in staying in Canada, consider speaking with an **International Student Advisor**.

WHAT WILL I LEARN?

A graduate degree in Mathematics and Statistics or Mathematics and Engineering can equip you with valuable and versatile skills, such as:

- **Knowledge** and **technical** skills
- Effective **communication skills** in multiple forms for diverse audiences
- **Information management**: prioritize, organize and synthesize large amounts of information
- **Time management**: Meet deadlines and manage responsibilities despite competing demands
- **Project management**: develop ideas, gather information, analyze, critically appraise findings, draw and act on conclusions
- **Creativity** and **innovation**
- **Perseverance**
- **Independence** and experience as a **collaborative** worker
- **Awareness**, an understanding of sound **ethical** practices, **social responsiblity**, responsible research and **cultural sensitivity**
- **Professionalism** in all aspects of work, research, and interactions
- **Leadership**: initiative and vision leading people and discussion

WHERE CAN I GO?

A PhD in Mathematics and Statistics or Mathematics and Engineering can take your career in many directions. In Canada, less than 40% of all PhDs will work in post-secondary education – the majority will work in industry, government, or non-profits.

- Academia
- Biostatistics
- Clinical Data Analysis
- Business Analysis
- Finance

Taking time to explore career options, build experience, and network can help you have a smooth transition to the world of work after graduation.

* This map is intended to provide suggestions for activities and careers, but everyone's abilities, experiences, and constraints are different. Build your own Grad Map using our online **My Grad Map** tool.

Graduate Studies FAQs

How do I use this map?

Whether you are considering or have embarked on graduate studies at Queen's, use this map to plan for success in five overlapping areas of your career and academic life. The map helps you explore possibilities, set goals and track your individual accomplishments. Everyone's journey is different – the guide offers options for finding your way at Queen's and setting the foundation for your future. To make your own customized map, use the online **My Grad Map** tool.

Where can I get help?

Queen's provides you with a broad range of support services from your first point of contact with the university through to graduation. Ranging from help with academics and careers, to physical, emotional, or spiritual resources – our welcoming environment offers the programs and services you need to be successful, both academically and personally. Check out the **SGS HABITAT** for available resources.

What is the community like?

At Queen's, graduate students from all disciplines learn and discover in a close-knit intellectual community. You will find friends, peers and support among the graduate students enrolled in Queen's more than 130 graduate programs within 50+ departments & research centres. With the world's best scholars, prize-winning professional development opportunities, excellent funding packages and life in the affordable, historic waterfront city of Kingston, Queen's offers a wonderful environment for graduate studies. Queen's is an integral part of the Kingston community, with the campus nestled in the core of the city, only a 10-minute walk to downtown with its shopping, dining and waterfront. For more about Kingston's history and culture, see Queen's University's **Discover Kingston** page.

Application FAQs

What do I need to know to APPLY?

ACADEMIC REQUIREMENTS

Master's degree in Mathematics and/or Statistics or related field with a minimum B+ standing and demonstrated research potential and clear interests. Applicants interested in Mathematics and Engineering will also have an undergraduate degree in an engineering field.

ADDITIONAL REQUIREMENTS

- Two official transcripts for all post-secondary studies.
- At least 2 letters of reference.
- Curriculum vitae.
- If English is not a native language, prospective students must meet the **English language proficiency requirements** in writing, speaking, reading, and listening. The School of Graduate Studies requires the following minimum scores: TOEFL (paper-based): 550, (2) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30), for a total of 88/120 (applicants must have the minimum score in each test as well as the minimum overall score), or (3) IELTS: 7.0 (academic module overall band score), or (4) PTE Academics: 65.

KEY DATES & DEADLINES

- **Application due:** January 15 to receive full funding consideration. There is no deadline to apply for admission.
- **Notification of acceptance:** Rolling acceptances.

Before you start your application, please review the **graduate studies application process.**

What about FUNDING?

The minimum funding guarantee for Mathematics and Statistics PhD students is $25,000 per year, throughout years 1-4. The funding package may be comprised of teaching assistantships or fellowships, research fellowships, internal and external awards and/or scholarships.

We encourage all students to apply for external funding from OGS, NSERC and other sources. Queen's will automatically issue a $10,000 top-up to incoming PhD students who are awarded federal government tri-council awards. For more information, see the School of Graduate Studies' information on **awards and scholarships.**

Queen's UNIVERSITY

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MATHEMATICS
AND STATISTICS

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