# Mathematics & Statistics Mathematics & Engineering 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 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, mathematical physics, mathematics applied to engineering, mathematical biology, and both theoretical and applied statistics.

#### Program STRUCTURE

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





"The graduate mathematics program at Queen's University is academically rigorous, deeply rewarding, the perfect preparation for a future career in industry or academia."

– Jeff Calder, Associate Professor of Mathematics, University of Minnesota

#### **RESEARCH Areas**

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

As part of your application for admission to the Department of Mathematics and Statistics you will be asked to describe your research interests. We encourage you to review faculty research interests and faculty profiles to learn more about the research interests represented in our Department. Applicants are encouraged to contact prospective supervisors with their questions.





## Mathematics & Statistics, Mathematics & Engineering PhD Map

DOCTOR OF PHILOSOPHY

YEAR IV
YEAR II
YEAR II
YEAR III
YEAR III
WEAR III

# ACHIEVE YOUR ACADEMIC GOALS

- Key priorities include your relationship with your supervisor and forming your supervisory committee, coursework, and 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 <u>Student Academic Success Services</u> for a variety of supports.
- Attend weekly seminars of interest, the Graduate Student seminar, and the departmental Colloquium.

- Write and defend your thesis prospectus.
- Embark on your substantive research.
- Find your way through the academic process with help from departmental and <u>School of</u> <u>Graduate Studies and Postdoctoral Affairs</u> <u>professional development workshops</u>, the department Grad Chair, and the <u>SGSPA website</u>
- Continue to attend seminars, and seek experiential/professional development opportunities.
- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the <u>SGSPA</u> writing camps, like Dissertation on the Lake.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings.
- Begin discussion of potential thesis defence examiners.
- 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

- Think about audiences for your research.
- Complete CORE 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.

- Present your work at graduate conferences, through professional associations, or topic
- Expand your research audience through social media such as Twitter or a blog.
- Apply to external funding agencies if eligible.
- Continue to present at conferences.
- Consider participating in the <u>3 Minute Thesis</u> (<u>3MT</u>) competition.
- Contact the <u>Queen's Media Centre</u> for guidance on speaking to news outlets about your work. List yourself on the <u>Arts and</u> Science University Research website.
- 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.
- Set up a meeting with the School of Graduate Studies and Postdoctoral Affairs for a <u>Grad Chat</u> to discuss your research interests.

#### BUILD SKILLS AND EXPERIENCE

- 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 SGSPA Blog. Look in the AMS Clubs Directory.
- Use a Teaching Assistant or Research Assistant position to develop your skills and experience.
- 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 <u>Centre for Teaching and</u> <u>Learning</u>.
- Investigate internships from <u>MITACS</u> and other sources. Find opportunities for extra training through CTL, School of Graduate Studies and Postdoctoral Affairs professional development, MITACS, or other sources to boost your skills.
- Prepare for work or studies in a multi-cultural environment by taking the Intercultural Awareness Training Certificate hosted by QUIC and FDISC.
- Apply to teach as a departmental teaching fellow.
- 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

- 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.
- Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.
- Do some targeted networking with people working in careers of interest, through <u>Queens</u> <u>Connects</u> on LinkedIn, the <u>Queen's Alumni</u> <u>Association</u>, professional associations, and at conferences. Get help from a Career Services workshop.
- Consider joining professional associations like the <u>Canadian Mathematical Society</u> or the <u>Canadian Applied and Industrial Mathematics</u> <u>Society</u>.
- Join groups on LinkedIn reflecting specific careers or topics of interest.

### LAUNCH YOUR CAREER

- Finding a career fit starts with knowing yourself.
   Take a <u>Career Services workshop</u> or meet with a career educator and coach for help. Check out the <u>Career Resource Area</u> for advice on various career options.
- Start reading publications like <u>University Affairs</u> and the <u>Chronicle of Higher Education</u>. Browse non-academic labour market websites.
- Stay on the lookout for special events like the School of Graduate Studies and Postdoctoral Affairs Career Week to explore your career pathways.
- Start building your teaching portfolio including student evaluations, and seeking mentorship.
- Explore different careers of interest by using Queens Connects on LinkedIn to connect with Queen's alumni. For more information check out Career Cruising.
- Investigate requirements for professional positions or other opportunities related to careers of interest.
- 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.
- 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, and 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 responsibility, 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
- Business Analysis
- Clinical Data 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.

#### How to use this map

Use the 5 rows of the map to explore possibilities and plan for success in the five overlapping areas of career and academics. The map just offers suggestions – you don't have to do it all! To make your own custom map, use the My Grad Map tool.

## Graduate Studies FAQs

### How do I make the most of my time at Queen's?

Use the Grad Map to plan for success in five overlapping areas of your career and academic life. Everyone's journey is different - the ideas on the maps are just suggestions to help you explore possibilities. For more support with your professional development, take advantage of the SGSPA professional development framework and the new Individual Development Plan (IDP) process to set customized goals to help you get career ready when you graduate.

#### 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 SGSPA website for available resources.

#### What is the community like?

At Queen's, graduate students from all disciplines learn and discover in a closeknit 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 <u>Discover Kingston</u> page.

## Graduate Application FAQs

#### What do I need to know to APPLY?

#### **ACADEMIC REQUIREMENTS**

Master's degree in Mathematics and/or Statistics or related field (e.g. engineering) with a minimum B+ standing and demonstrated research potential and clear interests.

#### ADDITIONAL REQUIREMENTS

• If English is not a native language, prospective students must meet the English language proficiency requirements in writing, speaking, reading, and listening. The following minimum scores are required: (1) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30). Applicants must have the minimum score in each test as well as the minimum overall score, or (2) IELTS: 7.0 (academic module overall band score and a 7.0 for each test band), or (3) PTE Academics: 65, or (4) CAEL CE -70 (minimum overall score).

#### **KEY DATES & DEADLINES**

- Application due: Although applications can be submitted up to April 30th, applicants are advised to submit their applications as soon as possible and by January 15th in order to receive full funding consideration.
- Notification of acceptance: Rolling acceptances.

Before you start your application, please review the <u>Graduate studies application</u> process.

#### What about FUNDING?

The minimum funding guarantee for Mathematics and Statistics PhD students is \$26,500 per year, throughout years 1-4. However, most PhD students receive additional funding through awards and fellowships to bring their support level up to \$30,000 per year.

We encourage all students to apply for external funding from OGS, NSERC, and other sources. For more information on sources of funding see <u>Funding</u>, <u>Awards</u>, <u>Scholarships</u> and <u>Bursaries</u>.



