Why GRADUATE STUDIES in ELECTRICAL & COMPUTER ENGINEERING?

As a PhD student in the important field of Electrical and Computer Engineering (ECE), you can play a vital role in future developments in such areas as microchip design, bioelectronics, artificial intelligence, machine vision, IoT, autonomous vehicle & robots, speech and language processing, wireless and optical communications, nanoelectronics, photonics, power electronics and systems, green energy, cybersecurity, supercomputing, software engineering, and thousands of other areas. Almost every aspect of modern life is impacted by electrical and computer engineering.

Graduate students and their work are an important part of an ongoing research process that provides the community with ways of understanding natural, cultural, imaginative, social and technological phenomena. Check out whygradstudies.ca for more reasons to choose graduate studies in engineering.

Why QUEEN’S?

As a PhD student in ECE at Queen’s you are part of one of the most research intensive universities in Canada. Our research program is internationally renowned with a wide range of research activities in all of the major specialization areas of electrical and computer engineering.

Queen’s ECE offers a number of cross-disciplinary opportunities in collaboration with the departments of Mathematics & Statistics, Physics, Computing, Mechanical Engineering, Mining, the School of Kinesiology and Health Studies, as well as the collaborative graduate program in Biomedical Engineering.

“Thanks to Queen’s ECE, where my MASc and PhD study paved the way for my rewarding career as a professor. Besides my thesis supervisor, I also collaborated with student and faculty researchers at Queen’s and other universities. I presented my research at companies and government labs to cultivate connections, and I took stints as a visiting researcher at a university and a company in Europe.”

— Tiago Falk, MASc, PhD

Our students come from all over the world. At Queen’s, graduate students from all disciplines learn and discover in a close-knit intellectual community.

Program STRUCTURE

PhD (4 years): 4 courses and seminars, thesis background and proposal exams, and thesis defense.
Electrical & Computer Engineering
PhD Map

DOCTOR OF PHILOSOPHY

2022-2023

YEAR I

ACHIEVE YOUR ACADEMIC GOALS
- Key priorities include your relationship with your supervisor, forming your committee, coursework and comprehensive 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 and School of Graduate Studies and Postdoctoral Affairs professional development for supports and workshops.
- Attend the Departmental Speaker Series (ELGC 891).

YEAR II

WRITE AND DEFEND YOUR THESIS PROPOSAL
- Write and defend your thesis proposal.
- Embark on your substantive research.
- Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.
- Find your way through the academic process with help from School of Graduate Studies and Postdoctoral Affairs professional development workshops, and the SGSPA website.
- If an industry internship is of interest, consult your supervisor. Seek experiential/professional development opportunities.

YEAR III

CONTINUE TO REGULARLY MEET WITH YOUR SUPERVISOR AND ADVISOR
- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGSPA writing camps such as Dissertation Boot Camp.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons publishing workshop.
- Begin discussing potential theses defenses.

YEAR IV

PLAN DATE OF THESIS SUBMISSION FOR EXAMINATION
- Plan date of thesis submission for examination.
- Present your research to ECE graduate students and faculty or at conferences and work with supervisor to prepare for defense.
- 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.
- Apply to NSERC, OGS, and other funding.
- Apply for the Graduate Dean’s Travel Grant for Doctoral Field Research.
- Consider targeting conference search and putting forward innovation ventures: check out Queen’s Innovation Connector.

BUILD SKILLS AND EXPERIENCE
- Serve on faculty or university committees: Talk to the Graduate Electrical & Computer Engineering (GEC) student society for tips on getting involved.
- Consider positions in student services, the SGSPA, or media outlets like the Queen’s Journal, CFRC, and the SGSPA Blog. Look in the AMS Club Directory.
- Use Teaching Assistant and Research Assistant positions to develop your skills and experience.

ENGAGE WITH YOUR COMMUNITY
- Consider volunteering with different community organizations, such as an Engineering Society Design Team.
- Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.

LAUNCH YOUR CAREER
- Tune into IEEE messages and publications targeting student members and career building. Learn about the jobs and careers of other ECE graduates.
- Take a Career Services workshop or meet with a career counselor for help.
- 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 School of Graduate Studies and Postdoctoral Affairs Career Week to explore your career pathways.

PREPARE FOR YOUR CAREER
- Start building your teaching portfolio including student evaluations, and seeking mentorship.
- Explore different careers of interest by using Queen’s Connect 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.

WHAT WILL I LEARN?
A graduate degree in Electrical and Computer Engineering can equip you with valuable and versatile skills, such as:
- Knowledge and technical skills
- Effective communication skills
- Problem solving skills 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 ethical sensibility
- Professionalism in all aspects of work, research, and interactions
- Leadership initiative and vision leading people and discussion

WHERE CAN I GO?
A PhD in Electrical and Computer Engineering can take your career in many directions. In Canada, less than 40% of all PhDs will work in post-secondary education.
Graduates from the PhD program have found careers with:
- Universities as professors
- Tech companies, such as Qualcomm, Ciena, Microsoft, Google, IBM, Cisco Systems, General Dynamics, Nvidia, Intel, American Express, Samsung
- Startups in all sectors, such as: wearables, digital health, health and fitness
- Services such as financial, pension, actuarial, intellectual properties

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 Major 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 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 of Applied Science or Master of Science.
• Grades Required: minimum cumulative average of 75% or B from Canadian or US Universities, or 80% for international students.

ADDITIONAL REQUIREMENTS
• Statement of Interest/Statement of Research.
• Curriculum Vitae.
• English Proficiency Requirements as listed on the ECE graduate website.

KEY DATES & DEADLINES
• Application due:
  • Fall Semester Start: January 31 (international), March 1 (domestic).
  • Winter Semester Start: August 15th
• Notification of acceptance: usually before the end of April for international students, end of May for domestic students.

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

What about FUNDING?

Minimum funding guarantee for PhD students is domestic/international PhD students is $25,000 per year throughout years 1-4. Students are usually funded through a combination of research assistantships, teaching assistantships, and/or scholarships. Funding for international students offsets their higher tuition fees.

You are encouraged to apply for external funding from OGS, NSERC and other sources. Queen’s will automatically issue a one time $10,000 award to incoming PhD students who have won federal government tri-council awards. For more information, see the School of Graduate Studies and Postdoctoral Affairs’ information on awards and scholarships.

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