Physics, Engineering Physics & Astronomy PhD Map

Applying to and Navigating Graduate Studies

Why Graduate Studies in Physics, Engineering, Physics, & Astronomy?

The PhD in Physics provides you with training in theory, computation, statistical modeling, and experimental methods as you pursue problems in fundamental and applied research. Physicists design mathematical models to describe complex phenomena and test these models by making observations, conducting experiments, or running numerical simulations. The skills obtained are highly sought after and transferable to a wide range of fields.

The degree leads to careers in academia and government-funded research centres as well as the private sector fields of finance, medicine, technology, and data analytics, to name just a few.

Why Queen's?

Queen's has one of the most active and dynamic physics departments in Canada. The Department is home to the McDonald Institute, a national research centre in particle astrophysics. Named after emeritus Queen's professor and 2015 Nobel laureate Art McDonald, the Institute is closely linked to activities at SNOLAB where experiments search for dark matter and probe fundamental properties of neutrinos.

Closely related is the Astrophysics group whose members at Queen's and the nearby Royal Military College study galaxies, the extragalactic Universe, black holes, and dark matter through theory, simulation, and observations at some of the world's largest observatories. Research within the applied and engineering physics group seeks to bring new physics understanding to important problems for society, including lighting technologies, solar energy, laser manufacturing and non-destructive testing while the Condensed Matter and Optics group focuses on nanophotonics and quantum optics. Group members are key players in NanoFabrication Kingston, a University-Industry collaboration that provides researchers with access to leading-edge equipment and expertise for the design of nanotechnologies.

Program Structure

PhD (4 years): Course work, research project, thesis & defense, seminar series.

Research Areas

- Astrophysics & Astronomy
- Condensed Matter Physics & Optics
- Engineering & Applied Physics
- Particle Physics & Particle Astrophysics

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

Visit the Department of Physics, Engineering Physics & Astronomy 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 them and tell them about your interest in graduate work and related experience.

2026-2027

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DOCTOR OF PHILOSOPHY (PhD)

	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR & TRANSITIONING
ACHIEVE YOUR ACADEMIC GOALS	• 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 and participate in graduate seminars and colloquia hosted by the department.	• Write and defend your thesis proposal. • Embark on your substantive research. • Set up regular meetings with your supervisor to discuss progress to timely completion. • Find your way through the academic process with the help of School of Graduate Studies and Postdoctoral Affairs (SGSPA) professional development.	• Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGSPA writing camps. • Consider publishing elements of your research. • 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 regarding sensitive topics. • Apply to NSERC, OGS, and other funding.	• Present your work at graduate conferences, through professional associations, or topic conferences. • Expand your research audience through social media or a blog. • Apply for the Graduate Dean's Travel Grant for Doctoral Field Research.	• Consider participating in the 3 Minute Thesis (3MT) or GRADflix competition. • Contact the Queen's Media Relations for guidance on speaking to news outlets about your work. List yourself on the Arts and Science University Research website.	• Continue to attend conferences in your area, and connect with scholars in your field and with community partners. • Continue public outreach through social media and Queen's Media Relations.
BUILD SKILLS AND EXPERIENCE	• Serve on departmental, faculty, or university committees. Talk to the Society for Graduate and Professional Students for tips on getting involved. • 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 skills for non-academic employment by continuing involvement on committees and in the community. • Start keeping an ePortfolio of your skills, experiences, and competencies. • For help with teaching, get support from the Centre for Teaching and Learning. Enrol in SGS902 or the PUTL Certificate for more professional development.	• Investigate internships from MITACS and other sources. • Find opportunities for extra training through CTL, School of Graduate Studies and Postdoctoral Affairs professional development, or other sources to boost your skills. • Prepare for work or studies in a multi-cultural environment by Volunteering with QUIC for the English Converstation program, planning social events and in the Intercultural Wellness Leaders Program.	• 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	• Consider volunteering with different community organizations, such as Martha's Table and Loving Spoonful. • Take advantage of the facilities linked to the department, including the Cancer Centre of Southeastern Ontario, the Sudbury Neutrino Observatory (SNOLAB), the Kingston Nano-Fabrication Laboratory (KNFL), and more.	• 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 LinkedIn, the Queen's Alumni Association, professional associations, and at conferences. Get help from a Career Services workshop.	• Consider joining professional societies in your field. • Join groups on LinkedIn reflecting specific careers or topics of interest.
LAUNCH YOUR CAREER	• Finding career fit starts with knowing yourself. Take a Career Services workshop or meet with a career educator and coach for help. • Start reading publications like University Affairs and the Chronicle of Higher Education. Browse non-academic labour market websites.	• Start building your teaching portfolio including student evaluations, and seeking mentorship. • Explore different careers of interest by using 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. • Find impactful work that aligns with your values using the Queen's Career Guide to the UN Sustainable Development Goals.	• 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. • 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.

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. To make your own custom map, use the My Grad Map tool: careers.queensu.ca/gradmaps.

Knowledge & Workplace Skills

A graduate degree in Physics, Engineering Physics & Astronomy 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

Career Possibilities

A PhD degree in Physics, Engineering Physics & Astronomy can take your career in many directions. Our PhD students are equipped with a strong foundation for careers in:

- Academia and research
- Consulting
- Medical technologies: radiation physics, x-ray physics
- Renewable energy
- Technology sector

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

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 Professional Development Plan (PDP) 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?

Queen's offers graduate students from every discipline a close-knit intellectual community where they can learn, discover, and build lasting connections. With more than 130 graduate programs across 50+ departments and research centres, students benefit from world-class scholars, prize-winning professional development, generous funding packages, and life in the historic waterfront city of Kingston. The campus sits at the heart of Kingston, just a 10-minute walk from downtown's shops, restaurants, and waterfront, and is deeply integrated with the local community. For more on 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 Science or Applied Science.
- Grade requirements: minimum B+ standing.

ADDITIONAL REQUIREMENTS

- Two official transcripts for all post-secondary studies.
- At least 2 letters of reference.
- Curriculum vitae.
- If English is not a first language, nor was the language of instruction in undergraduate studies, prospective students must meet English language proficiency requirements in writing, speaking, reading, and listening as part of the application process, and before final acceptance is granted, as per School of Graduate Studies and Postdoctoral Affairs' regulations.

KEY DATES & DEADLINES

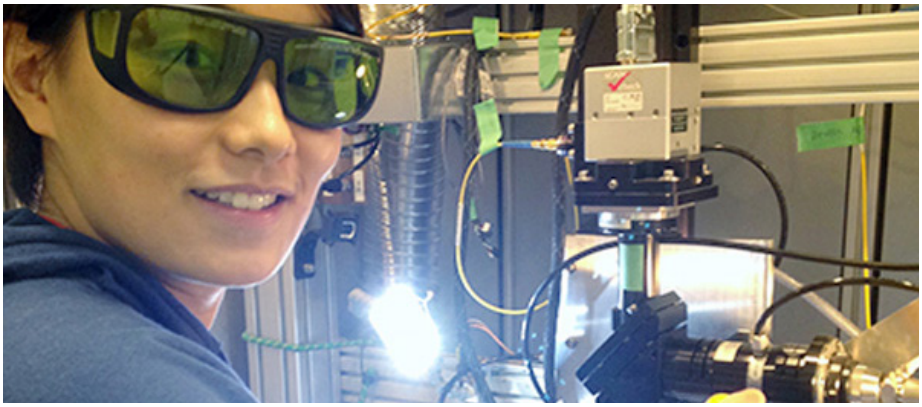
- **Application due:** January 7th.
- **Notification of acceptance:** 4 weeks after the full application has been received.

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

What about Funding?

Doctoral students are currently guaranteed minimum funding of $25,000 per year for years 1-4. This basic level funding consists of graduate awards, external scholarships, teaching assistantships, and support from your supervisor.

We encourage all students to apply for external funding from OGS, NSERC, and other sources. For more information on awards and scholarships, consult the School of Graduate Studies and Postdoctoral Affairs' website.



SMITH ENGINEERING
Queen's University

For questions, please contact:
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