Why GRADUATE STUDIES in PHYSICS, ENGINEERING PHYSICS & ASTRONOMY?

The PhD in Physics provides you with training in theory, computation, statistical modelling, 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 transferrable 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

- Condensed Matter Physics & Optics
- Engineering & Applied Physics
- Astrophysics & Astronomy
- 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 him/her and tell them about your interest in graduate work and related experience.
**Physics, Engineering Physics & Astronomy PhD Map**

**DOCTOR OF PHILOSOPHY (PHD)**

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**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.

**BUILD SKILLS AND EXPERIENCE**

- 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 for the Graduate Dean’s Travel Grant for Doctoral Field Research.
- Serve on departmental, faculty or university committees. Talk to the Society for Graduate Students for tips on getting involved.
- Consider positions in student services, the SGS, or media outlets like the Queen’s Journal, the SGS Blog, or the Queen’s Alumni Association. Join groups on LinkedIn reflecting specific careers or areas of interest.
- 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 Queen’s Connects on LinkedIn, the Queen’s Alumni Association, professional associations, and at conferences.

**ENGAGE WITH YOUR COMMUNITY**

- Finish 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 Queen’s Connects on LinkedIn to connect with Queen’s alumni, or find alumni in various careers through “Ask an 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.

**MAXIMIZE RESEARCH IMPACT**

- Write and defend your thesis proposal.
- Embrace 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 the help of Expanding Horizons.
- Seek experiential/professional development opportunities.
- Present your work at graduate conferences, through professional associations, or topic conferences.
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**YEAR I**

- Write and defend your thesis proposal.
- Embrace 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 the help of Expanding Horizons.
- Seek experiential/professional development opportunities.

**YEAR II**

- Complete theput certificate for more professional development in teaching and learning.
- 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.
- Enroll in SGS901 or the PTFL certification.
- Visit the Queen’s Journal, the SGS Blog, or the Queen’s Alumni Association.
- Join groups on LinkedIn reflecting specific careers or areas of interest.

**YEAR III**

- Continue to present at conferences.
- Complete the put certificate for more professional development in teaching and learning.
- Continue to present at conferences.
- Consider participating in the 1 Minute Thesis (1MT) 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.
- 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 Queen’s Connects on LinkedIn, the Queen’s Alumni Association, professional associations, and at conferences.
- Get help from a Career Services workshop.

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**WHERE CAN I GO?**

- 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.

**WHAT WILL I LEARN?**

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
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Visit careers.queensu.ca/gradmaps for the online version with links!
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 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: (1) 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**: February 15th.
- **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?

The minimum funding guarantee for Physics PhD students is $27,500 per year, throughout 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. Queen's will automatically issue a $10,000 award to incoming PhD students who have won federal government tri-council awards. For more information, see the School of Graduate Studies' information on [awards and scholarships](#).

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