Get to know PHYSICS AND ASTRONOMY

The Department of Physics at Queen’s is one of Canada’s leading teaching and research institutes in Physics, Engineering Physics and Astronomy. Our faculty include high-profile, world-class physicists and astronomers such as Nobel Laureate Art McDonald. Queen’s has the largest, combined research group in astronomy, astrophysics and astroparticle physics in North America, and possibly the world. The Physics Department also created the first Engineering Physics program in Canada. World-leading researchers in quantum optics, nanoscience and nanophotonics merge our strength in applied physics with fundamental research in condensed matter physics and optics.

Physics at Queen’s combines high calibre research with an intermediate-scale learning setting enabling attention and care towards undergraduate teaching as well as exposure to a broad range of topics and expertise. Our students will learn in an engaging environment with the opportunity to conduct research in state-of-the-art laboratories, including inter-disciplinary research, as well as projects involving international collaborators such as experiments in dark matter and neutrinos at SNOLAB.

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A Common START

Students in our Faculty are admitted into Arts, Science or Computing but the focus is on a common first year. Through self-exploration, and while you settle into university life, you have the chance to work with our advisors and faculty to uncover where your real interests and opportunities for success are. Sometimes that discovery happens fairly quickly, and for other students it takes some work and time before the “ah-ha!” happens – either way your first year at Queen’s will be a great experience.

Degree OPTIONS

Bachelor of Science (Honours)
Major / Minor / Specialization in Physics, Astrophysics, Mathematical Physics
Bachelor of Science (General)
Bachelor of Arts (General)
Combined BScH/MSc Internship option available

Queen’s ADMISSIONS

Students apply to Queen’s Science (QS) through the OUAC (Ontario Universities Application Centre) website (ouac.on.ca). Secondary School prerequisites include English 4U, Advanced Functions 4U, Calculus and Vectors 4U, plus two of Biology 4U, Chemistry 4U or Physics 4U.

Course HIGHLIGHTS

One of the most popular courses in physics is our Physicists in the Nuclear Age course for those interested in the impact of science on our century. In 2nd and 3rd years, students study topics such as classical mechanics, electromagnetism, thermodynamics, advanced laboratory, relativity and quantum mechanics. In 4th year, students have the opportunity to take specialized courses in current, modern subjects such as nanoscience, medical physics, lasers, nuclear and particle physics, solid state physics and general relativity.


That is a degree from Queen’s. quartsci.com
In first year take PHYS 104 or 106. Take MATH 110 or 111, MATH 120 or 121. If you’re thinking about specializing in Astrophysics, take CHEM 112. Each Plan will have at least one required first-year course, including minors. It is important to take a variety of first-year courses to keep as many pathways open as possible for you going into second year. For details see the Arts and Science Academic Calendar.

In second year take PHYS 206, 212, 239, 242 and 250. Be sure to take the 200-level MATH courses that are required, as 300-level PHYS relies on them. Astrophysics specialization students take PHYS 216. Need help mapping all of your core, option, supporting and elective courses (including those not listed above) to make sure you will have what you need to complete your degree? Use the Course Mapping Tool on the Arts and Science website.

Complete all 300-level requirements/core courses for the major or specialization. This is a busy year with courses like PHYS 344 and 345 (quantum mechanics), and the full-year lab course PHYS 350. Interested in a Master’s degree in Physics? Consider the Combined B.S/H/M.Sc program for top students completing their 3rd year.

Want to enhance your degree? Consider a certificate in Geographic Information Science or explore other certificates available.

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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.

A balanced approach leads to long-term success. While you will learn a lot from your studies, taking time to get relevant experience outside of the classroom, build your network, and gain international experience, will position you to be more competitive in your job search or grad school applications.

Get started thinking about the future now – where do you want to go after your degree? Having tentative goals (like careers or grad school) while working through your degree can help with short-term decisions about courses and experiences, but also help you keep motivated for success.

Get the help you need

Queen’s provides you with a broad range of support services from your first point of contact with the university through to graduation. At Queen’s, you are never alone. We have many offices dedicated to helping you learn, think and do.

Ranging from help with academics and careers, to physical, emotional, or spiritual resources – our welcoming living and learning environment offers the programs and services you need to be successful, both academically and personally, and Queen’s wants you to succeed! Check out the Student Affairs website for available resources.

Succeed in the workplace

What employers want

The Canadian Council of Chief Executives list the top 6 skills sought by employers as:

1. People skills
2. Communication skills
3. Problem-solving skills
4. Analytical abilities
5. Leadership skills
6. Industry-specific knowledge

Take the time to think about the unique skills you have developed at Queen’s, starting with the skills list here for ideas. Explaining your strengths with compelling examples will be important for applications to employers and further education. For help, check out the Career Services skills workshop.

What can I learn studying PHYSICS AND ASTRONOMY?

- Knowledge of physics theories and mathematical models
- Proficiency in mathematics
- Facility for quantitative mathematical and computational analysis
- Experience with laboratory equipment
- Design experiments and develop and write research proposals
- Review scientific literature
- Draw conclusions from data and evaluate sources of error
- Explain technical information clearly in writing and verbal communication
- Use statistical software
- Adopt a systematic, analytical approach to problems