Get to know ENGINEERING PHYSICS

This program allows students to apply the knowledge of fundamental physical principles underlying modern technology and processes. You will study a strategic combination of math, physics and engineering courses from a chosen specialty area. Courses in quantum mechanics, laser optics and nanotechnology will help you prepare for an engineering career at the leading edge of technology. You will acquire advanced problem-solving and instrumentation skills, and will be able to apply your superior mathematical, analytical and abstract thinking ability to modern engineering challenges.

Degree OPTIONS

Bachelor of Applied Science in Engineering
Bachelor of Applied Science in Engineering with Professional Internship

All students in Engineering Physics specialize by taking one of 4 options: Mechanical, Computing, Electrical or Materials Engineering. Students in each option take a significant number of courses at the same level as those in the engineering major. Graduates of these specializations can work as engineers in their chosen specialization and continue to graduate school in the option.

We’re closer than you think

Acquire Skills. Gain Experience. Go Global. That is a degree from Queen’s.

Engineeringscience Üniversitesi

Department of Engineering Physics
Faculty of Engineering and Applied Science
Stirling Hall
64 Bader Lane
(613) 533-2207
physics.queensu.ca

For more information, contact quip@queensu.ca or visit the Program Website.

Why study in Kingston?

For 175 years, our community has been more than a collection of bright minds – Queen’s has attracted students with an ambitious spirit. Queen’s has the highest retention rates, the highest graduation rates, and one of the highest employment rates among recent graduates. We are a research-intensive university focused on the undergraduate experience. The BBC has identified us as one of the GREAT UNIVERSITY TOWNS in the world – and is often awarded the safest city in Canada. We are a university city at the core; 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.

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.

ENGINEERING PHYSICS

“Queen’s Physics Professor Emeritus Dr. Arthur B. McDonald was awarded the 2015 Nobel Prize in Physics with Takaaki Kajita of Japan. His research, leading the Sudbury Neutrino Observatory, unlocked the mystery of neutrinos – fundamental particles created in the Sun’s core. Engineering Physics students have been involved in this research since its beginning, and continue to collaborate in world leading experiments and research during their studies.”

That is a degree from Queen’s.

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**Engineering Physics MAJOR MAP**

**BACHELOR OF APPLIED SCIENCE | BACHELOR OF APPLIED SCIENCE WITH PROFESSIONAL INTERNSHIP**

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**GET THE COURSES YOU NEED**

Queen’s Engineering first year is common — courses include Physics, Chemistry, Calculus, Algebra, Graphics, Computing and Earth Systems Engineering.

Also APS1C01, the entry level course in our Engineering Design and Practice Sequence (EDPS), focusing on problem solving, experimentation principles and finishing off with a team-based engineering project.

Discipline selection will take place in February!

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**GET RELEVANT EXPERIENCE**

Join teams or clubs on campus, or an engineering design team such as Queen’s University Experimental Sustainability Team, Queen’s Space Engineering Team, Queen’s Solar Design Team, and the Mostly Autonomous Sailboat Team.

See the AMS Clubs Directory or the Queen’s Get Involved page for more ideas.

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**GET CONNECTED WITH THE COMMUNITY**

Volunteer on or off-campus with different community organizations, such as Let’s Talk Science (LTS), Women in Science and Engineering, Science Rendezvous, and Engineers without Borders (EWB).

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**GET THINKING GLOBALLY**

The Queen’s University International Centre is your first stop to learn how to internationalize your degree or to leverage your existing cross-cultural experience.

Speak to a QUIC advisor or get involved in their programs, events and training opportunities.

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**GET READY FOR LIFE AFTER GRADUATION**

Grappling with program decisions? Go to the Orientation Evenings, held by different Engineering departments and attend the various Career Fairs during the year.

Get some help deciding by visiting Career Services.

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**1ST YEAR**

You will take a second engineering design course - APS200 - where we connect the physics you learn to the technology that helps society. More hands-on experience comes in laboratory and data management classes.

You start taking courses in your option: Mechanical, Materials, Electrical or Computer engineering alongside your courses in physics.

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**2ND YEAR**

Courses deepen your knowledge of physics from both a theoretical and practical side. Your third EDPS design course (ENPH 354) deepens your ability to work as a team, taking on technical challenges.

Take 5-6 courses with engineering students in your chosen option. Courses range from digital communications to materials processing. From operating systems to heat transfer - depending on your chosen option.

Consider applying to the Accelerated Master's program. In this program, students start research in the summer after their third year, and take graduate courses concurrently with the fourth year program.

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**3RD YEAR**

Courses deepen your knowledge of physics from both a theoretical and practical side. Your third EDPS design course (ENPH 354) deepens your ability to work as a team, taking on technical challenges.

Take 5-6 courses with engineering students in your chosen option. Courses range from digital communications to materials processing. From operating systems to heat transfer - depending on your chosen option.

Consider applying to the Accelerated Master’s program. In this program, students start research in the summer after their third year, and take graduate courses concurrently with the fourth year program.

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**4TH OR FINAL YEAR**

All Eng Phys students participate in the 'capstone' EDPS team-based project course — ENPH454, in addition to an individual engineering thesis, an advanced laboratory course, and a high-level electromagnetic theory course.

Choose technical elective courses from a huge range, including Laser Optics, Robotics, Computer Vision, Nuclear Reactors, Aerodynamics and General Relativity.

Investigate requirements for full-time jobs or other opportunities related to careers of interest.

Assess what experience you’re lacking and fill in gaps with volunteering, clubs, or internships — check out Career Services workshops for help.

Consider joining professional associations like Canadian Association of Physicists (CAP), American Physical Society (APS), Institute of Electrical and Electronic Engineers (IEEE), and American Society of Mechanical Engineers (ASME).

Join groups on LinkedIn reflecting specific careers or topics of interest in Engineering Physics.

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**Employability skills**

Your time at Queen’s will give you valuable skills to boost your employability, including:

- Proficiency in mathematics and numerical modeling with courses in math and physics
- Time and resource management — taught formally in class and then applied in your projects
- Work independently and in a team on a project — a group design project is undertaken every year and a thesis in the final year
- Able to solve complex problems using your broad scientific knowledge
- You gain practical skills as an engineer, and back them up with the deep knowledge of a scientist
- Ability to make careful measurements with sophisticated equipment in laboratory classes
- Proficiency with modern physics allowing you to work with tomorrow’s technologies

**Where could I go after graduation?**

- Aerospace engineer
- Automotive industry
- Astrophysics
- Atmospheric science
- Biophysics
- Computer engineering
- Energy (nuclear, solar, wind, etc.)
- Environmental management
- Financial modelling
- Forensic science
- Management consulting
- Medicine
- Nanotechnology
- Nuclear engineering
- Oceanography
- Semiconductors and electronics
- Software engineering

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

*Some careers may require additional training. Linked careers are only suggestions.

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Visit careers.queensu.ca/majormaps for the online version with links!