### Engineering Physics

#### 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 prepare you 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 Physics 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.

---

### A Common START

Queen’s is unique in offering a common first year along with an open discipline choice. When you do choose your program, you don’t have to worry about caps or quotas. Provided you pass all of your first year courses, you are guaranteed a place in your engineering program of choice. Queen’s also offers Section 900, a special extended program for students struggling with first year courses. Take things at a slower pace and recover in time for second year.

---

### Course HIGHLIGHTS

Engineering Physics students have the opportunity to take a wide range of technical courses to help prepare them for the many possible career destinations available. Such courses include:

- Laser Optics
- Nanoscience and Nanotechnology
- Nuclear Physics
- Medical Physics
- Solid State Devices
- General Relativity

Students also do sophisticated experiments and work together in engineering design through all four years of the program.

---

### Engineering Physics

#### 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 GREATEST UNIVERSITY TOWNS in the world – and is often awarded the safest city in Canada. We are a university city at the core; a place in your engineering program of choice. Provided you pass all of your first year courses, you are guaranteed a place in your engineering program of choice. Queen’s also offers Section 900, a special extended program for students struggling with first year courses. Take things at a slower pace and recover in time for second year.

---

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


**GET THE COURSES YOU NEED**

1ST YEAR
- Queen’s Engineering first year is common – courses include: Physics, Chemistry, Calculus, Algebra, Graphics, Computing and Earth Systems Engineering.
- Also APSC100, 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!

2ND YEAR
- You will take a second engineering design course - APSC 200 - 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: Mechanic, Material, Electrical or Computer engineering alongside your courses in physics.

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 3-6 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.

**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.

**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).
- Get involved with the Engineering Society (ENG-SOC) and the Alma Mater Society (AMS). Start or continue volunteering with organizations such as the Commerce & Engineering Environmental Conference (CEEC).

**GET THINKING GLOBALLY**

- The Queen’s University International Centre is your first step to learn how to internationalize your degree or to leverage your existing cross-cultural experience.
- Speak to a QUC advisor or get involved in their programs, events and training opportunities.

**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.
- Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as Career Opportunities in Engineering. For more information check out Career Cruising or by finding and connecting with alumni on Queen’s Connects.

**CONSIDER A 12-16 MONTH QUIP INTERNSHIP**

- 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.

**4TH OR FINAL YEAR**

- All Eng Phys students participate in the ‘captain’ 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.

**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. Listed careers are only suggestions.*

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

© Career Services, Queen’s University, 2019 - 2020