

# Engineering Physics

## Get to know ENGINEERING PHYSICS

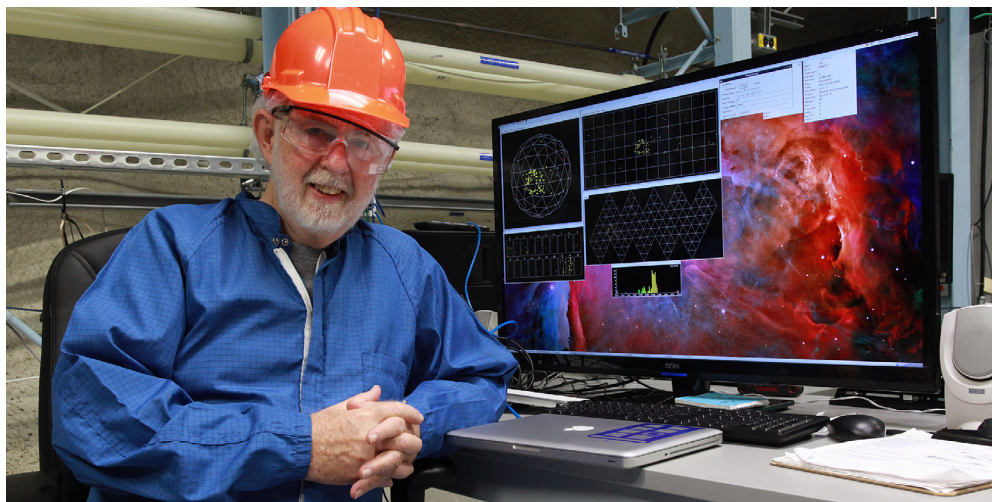
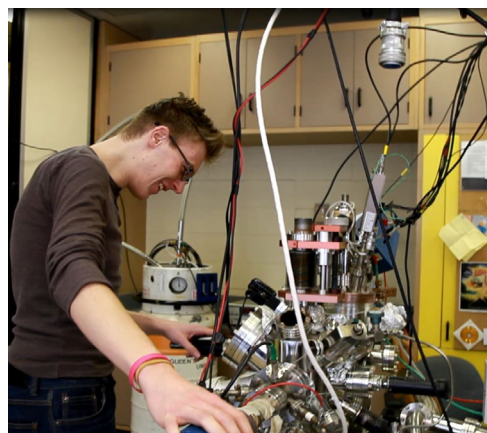
This program allows students to apply the knowledge of fundamental physical principles underlying modern technology and processes. You will study a strategic combination of math, physics, and engineering courses from a chosen speciality area. Courses in quantum mechanics, laser optics, and nanotechnology 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

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 or continue to graduate school in either physics or their engineering option.



*"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."*

## Queen's ADMISSIONS

Students apply to Queen's Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include these five 4U courses, English 4U, Calculus and Vectors 4U, Advanced Functions 4U, Chemistry 4U, and Physics 4U. Applicants outside of Ontario may have additional requirements.

## A Common START

Queens 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

In addition to a variety of technical courses in their engineering option, Engineering Physics students have the opportunity to take a wide range of physics courses to help prepare them for many possible career destinations. Such courses including:

- Laser Optics
- Nanoscience and Nanotechnology
- Nuclear Physics
- Medical Physics
- Solid State Devices
- General Relativity
- Mathematical Methods in Physics
- High Performance Computing for Engineering Physics
- Advanced Mechanics
- Quantum Physics (Mechanics or Theory)

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

## Acquire Skills. Gain Experience. Go Global.

That is a degree from Queen's.

[queensu.ca/physics](http://queensu.ca/physics)

# Engineering Physics MAJOR MAP



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



CONSIDER A 12-16 MONTH QUIP INTERNSHIP

**Knowledge & Workplace Skills**

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

- Proficiency in **mathematics and numerical modelling** 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

**Career Possibilities**

- Aerospace engineer
- Automotive industry
- Astrophysics
- Atmospheric science
- Biophysics
- Computer engineering
- Energy (nuclear, solar, wind, etc.)
- Environmental management
- Financial modeling
- Forensic science
- Management consulting
- Medicine
- Nanotechnology
- Nuclear engineering
- Oceanography
- Quantum Physics
- 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.

**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.



# Engineering Physics

## QUIP QUEEN'S UNDERGRADUATE INTERNSHIP PROGRAM

**START DATES** in May, September, or January  
**POSITIONS** are paid and full-time  
**WORK TERMS** are 12-16 months long

### PROGRAM OVERVIEW

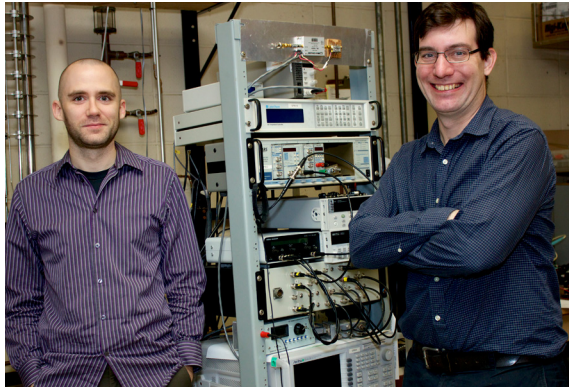
- Graduate with a "Professional Internship" degree
- Learn about current advances, practices and technologies in business and industry.
- Test drive a career, earn a competitive salary, and get real world experience.

### ELIGIBILITY

- 2nd or 3rd Year Students
- Minimum GPA of 1.9

### WHY QUIP?

- Gain a year of career-related work experience.
- Build network connections.
- Receive support from Queen's staff in job search and during internship.



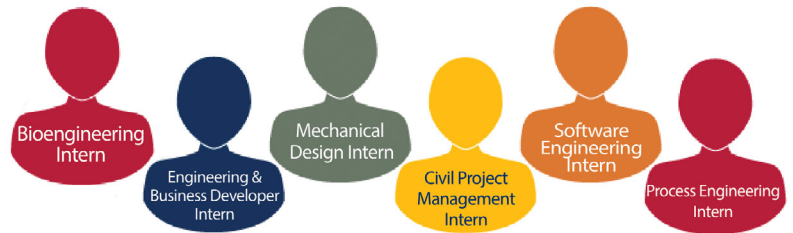
Get started thinking about the future now – where do you want to go after your degree? Having tentative goals (like careers or grad school) while working through your degree can help with short-term decisions about courses and experiences, but also help you keep motivated for success.

### 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. Queen's wants you to succeed! Check out the [Student Affairs website](#) for available resources.

### SAMPLE PAST INTERNSHIPS



For more information, contact [quip@queensu.ca](mailto:quip@queensu.ca) or visit the [Program Website](#).

## Why study in Kingston?

Since 1841, 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 Kingston as one of the GREATEST UNIVERSITY TOWNS in the world – and it is often identified as the safest city in Canada. It is a university city at the core; just a quick drive to Toronto, Montreal, Ottawa and even New York. At a university with more clubs per capita than any other university in Canada, and in a city with more restaurants per capita than any other city in North America, you will have the experience of a lifetime at Queen's – and graduate with a degree that is globally recognized among the best.

*We're closer than you think*



Department of Physics, Engineering Physics & Astronomy  
 Stirling Hall  
 64 Bader Lane  
 (613) 533-2707  
[queensu.ca/physics](http://queensu.ca/physics)