

Electrical Engineering

Get to know **ELECTRICAL ENGINEERING**

Electrical engineers are specialists who provide essential support for the conveniences and services related to electric power and communications, and take leading roles in the design of new products and services. As an electrical engineering student, you will study electric circuits and motors, electromagnetics, microelectronics, signal processing, communications, robotics and control, mechatronics, digital logic, and microprocessors. You will build on a base of applied mathematics and physics, and learn to use the laws of physics that govern electrical systems to design new products and services.

Degree **OPTIONS**

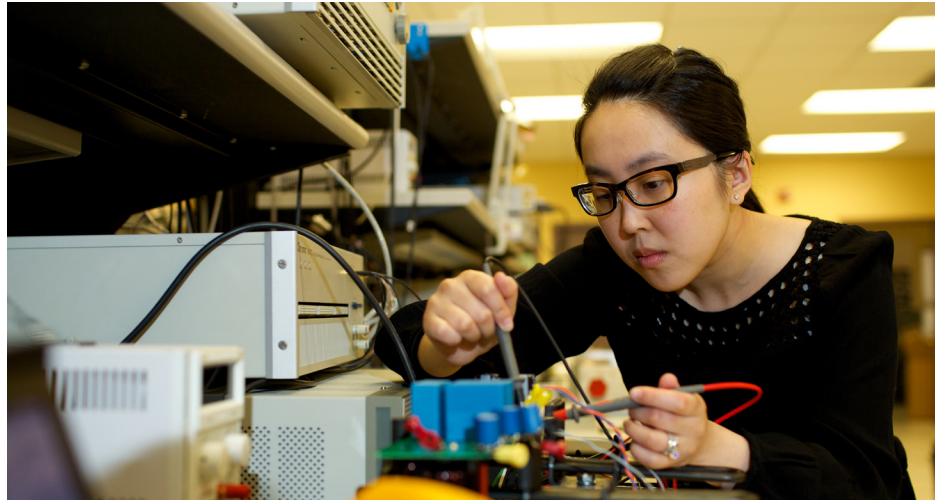
Bachelor of Applied Science in Engineering

Bachelor of Applied Science in Engineering with Professional Internship

Specialization in Biomedical Engineering / Communications & Signal Processing / Communications Systems & Networks / Microelectronics & Photonics / Mechatronics / Power Electronics & Systems / Robotics & Control

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



"If you can imagine working with robots or solar-powered vehicles, or envision a career in the field of power engineering or high-tech communications - you are in the right place!"

have additional requirements.

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**

Electrical Engineering 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:

- Biomedical Signal and Image Processing
- Introduction to Robotics
- Bioinformatic Analytics
- Fiber Optic Communications
- Machine Vision

- Microwave and RF Circuits and Systems
- Energy and Power Systems
- Wireless Communications

Design, Innovation, and **AI Integration**

Queen's Electrical Engineering fosters hands-on design and innovation, with project courses spanning second year, third year, and the final-year capstone. Students can join design teams like Queen's Robotics and the Queen's Solar Design Team for real-world experience. For broader innovation and business skills, students can also take the Introduction to Business for Entrepreneurs or join the Queen's Founders and Innovator Initiative (QFII).

The program integrates artificial intelligence (AI) into the curriculum through upper-year electives, which cover AI algorithms and applications. Electrical Engineering students are prepared to work with emerging AI-driven technologies, gaining the skills to responsibly integrate AI into intelligent devices, smart systems, robots, and advanced communication networks.

Electrical Engineering MAJOR MAP

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



Knowledge & Workplace Skills

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

- Understanding of **electronic circuit design**, **network analysis** and object-oriented programming
- **Foundational understanding of AI** - develop knowledge to engage with AI and intelligent system design
- Proficiency in **mathematics**
- Attention to detail
- **Research skills** - conduct scientific research and analyze quantitative information
- **Problem solving** - approach problems from different perspectives and analyze individual facets of a problem
- Ability to **work independently** and in a team on a project
- **Oral and written communication** – write clearly on technical topics and give presentations
- Time and resource management

Career Possibilities

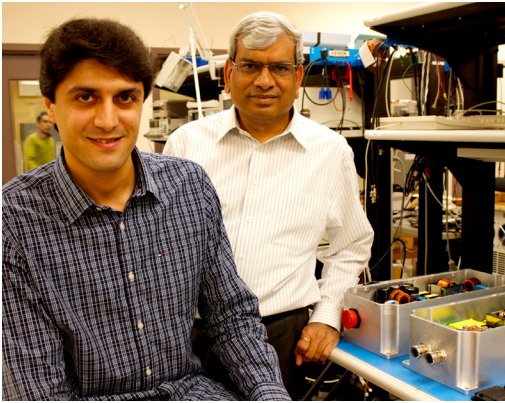
- Autonomous robotics
- AI applications in smart systems and automation
- Aviation and aerospace design
- Biotechnology
- Component design engineer
- Consumer electronics
- Digital systems design
- Electrical distribution engineer
- Fibre and laser electro-optics
- Game development/design
- Green power systems
- Information architecture
- Manufacturing and automation
- Sensory systems engineer
- Semiconductor design
- Security systems
- Wearable technology

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.

Electrical Engineering



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.



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QUIP

QUEEN'S UNDERGRADUATE
INTERNSHIP PROGRAM

START DATES

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.

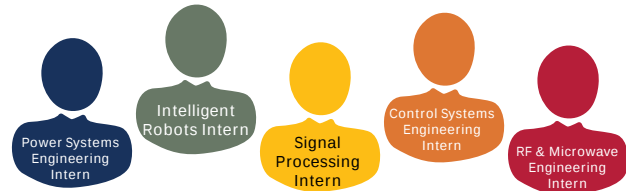
ELIGIBILITY

- Complete 1st year before you register
- Complete 2nd or 3rd year before your internship
- Minimum GPA of 1.9
- Return to Queen's after your internship to finish your degree

WHY QUIP?

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

Sample Past Internships



For more information, contact 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.

