Get to know COMPUTER ENGINEERING

The information and communication technology of our knowledge-based society places computer engineers at the hub of a computing revolution that is constantly changing the way people live and work. In this program, you will study circuits, electronics, digital systems, microprocessors, computer architecture, data structures, algorithms, computer networks, operating systems, and software specification and development. You may choose to specialize in computer hardware, computer systems, software engineering, or mechatronics streams of specialization, and complement your core knowledge with advanced topics in electrical and computer engineering.

Degree OPTIONS

Bachelor of Science in Engineering
Bachelor of Science in Engineering with Professional Internship
Specialization in Computer Hardware / Computer Systems / Software Engineering / Mechatronics

Queen’s ADMISSIONS

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario Universities Application Centre) website. Secondary School prerequisites include six 4U, Earth and Space Science 4U, a grade of 70% must be obtained in English 4U, Calculus and Vectors 4U, Chemistry 4U, and Physics 4U. A final grade of 70% must be obtained in English 4U. Applicants outside of Ontario may have additional requirements.

ECEI - INNOVATION STREAM

Consider Queen’s Electrical & Computer Innovation Stream, focused on developing entrepreneurial skills, alongside the in-depth, world-class technical education that is the hallmark of Queen’s Engineering. Students apply directly from OUAC with admission requirements for ECEI being the same as QE.

With admission limited to 50 students, you will receive an enriched curriculum that builds on Engineering’s common first year, participate in team-based learning that focuses on product development and prototype demonstration, and network with like-minded students and present your unique ideas. If you pass all of your first year courses, you are guaranteed a place in your engineering program of choice. Queen’s also offers J-Section, 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

Computer 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:

- Computer Vision
- Game Architecture
- Software Architecture
- Advanced User Interface Design
- Advanced Database Systems
- Software Requirements
- Computer System Architecture

"Our undergraduate faculty-to-student ratio is among the highest in the country and translates to a very direct and personal educational experience for our students."

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.

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 graduate 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 toward your degree can help with short-term decisions about courses and experiences, but also help you keep motivated for success.

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.

See the full list of skills here.

What can I learn studying COMPUTER ENGINEERING?

- Understanding of computer systems, computer hardware, electronics, and software engineering
- Knowledge of research techniques and methods of data analysis
- Analytical and logical thinking
- Problem solving
- Conduct scientific research and summarize findings
- Proficiency in mathematics – solve mathematical problems and analyze quantitative information
- Oral and written communication – explain technical information to others in reports and presentations
- Work independently and in a team on a project
- Time and resource management

Innovation (EEi) stream or Computer

In this program, you will study circuits, electronics, digital systems, microprocessors, computer architecture, data structures, algorithms, computer networks, operating systems, and software specification and development. You may choose to specialize in computer hardware, computer systems, software engineering, or mechatronics streams of specialization, and complement your core knowledge with advanced topics in electrical and computer engineering.

In the second year in either the Electrical Engineering Innovation stream or Computer Engineering Innovation (EEI) stream.


department of electrical and computer engineering

Faculty of Engineering and Applied Science
Walter Light Hall, Rm. 416
19 Union Street
613.533.2925
www.ecequeensu.ca
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.

2ND YEAR

3RD YEAR

4TH OR FINAL YEAR
All Computer Engineering students follow up their ELEC 390 ECE Design course with the Computer Engineering Project course (ELEC 498). CEi students follow up their Entrepreneurial ECE Design course with Entrepreneurial Computer Engineering Project.

GET RELEVANT EXPERIENCE

1ST YEAR
Join teams or clubs on campus such as Code the Change, Engweek Committee, Queens First Robotics Team and the Solar Design Team (ROSET).

2ND YEAR
Look into summer jobs related to computer engineering by talking to the department or Career Services about work through SWEP or NSERC.

3RD YEAR
Stay during the summer as an assistant to a faculty member or apply for an external summer research opportunity.

4TH OR FINAL YEAR
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 the Career Services skills workshop for help.

GET CONNECTED WITH THE COMMUNITY

1ST YEAR
Volunteer on or off campus with different community organizations, such as Queen's Game Developers Club, Science Quest, and Mostly Autonomous Sailboat Team (MAST).

2ND YEAR
Get involved with the Engineering Society (ENGSOC).

3RD YEAR
Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen's Connects Career Network.

4TH OR FINAL YEAR
Consider joining professional associations like the Institute of Electrical and Electronics Engineers and Professional Engineers Ontario. Join groups on LinkedIn reflecting specific careers or topics of interest in Electrical Engineering.

GET THINKING GLOBALLY

1ST YEAR
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.

2ND YEAR
Is an exchange in your future? Start thinking about where you would like to study abroad. Apply in January for a 3rd year exchange through your faculty's International Office. If exchange isn't for you, come talk to QUIC about some other options.

3RD YEAR
Build your intercultural competence by getting involved with other cultures or by practising or improving your language skills. Check QUIC's resources for ideas to go abroad, and volunteer or attend one of their events.

4TH OR FINAL YEAR
Prepare for work or studies in a multi-cultural environment by taking QUIC's Intercultural Competency Certificate, and research possible immigration regulations.

Where could I go after graduation?

Applications developer
Banking
Business administration
Business analyst
Chip architect
Computer architect
Computer engineer
Consumer services
Data processing
Database administration
Education
Electronic commerce
Finance
Game development
Informatics
Integrated circuit design
Law
Manufacturing
Mechatronics
Medical research
Network engineer
Online security
Power generation
Public administration
Robotics
Security
Software and hardware analysis and design
System support
Telecommunications

*some careers may require additional training

GET READY FOR LIFE AFTER GRADUATION

1ST YEAR
Grappling with program decisions? Go to the Orientation Evenings held by different Engineering departments and attend the various Career Fairs during the year.

2ND YEAR
Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as Vault Guide to Technology Careers, talking to people whose jobs interest you, or finding engineering alumni on LinkedIn.

3RD YEAR
Start focusing on areas of interest. Research education requirements for careers of interest. If needed, prepare to take any required tests (like the LSAT or GMAT) and get help thinking about grad school from Career Service.

4TH OR FINAL YEAR
Apply to jobs or future education, or make plans for other adventures. Get help from Career Services with job searching, resumes, interviews, grad school applications, or other decisions.