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 University Application Centre) website. Secondary School prerequisites include five 4U and 4M courses, one of which must be English 4U. Calculus and Vectors 4U, Chemistry 4U, and Physics 4U are all required along with one of Advanced Functions 4U, Biology 4U, Data Management 4U, Computer Science 4U, Earth and Space Science 4U. A final grade of 70% must be obtained in English 4U. Applicants outside of Ontario may 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

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

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 2nd year in either the Electrical Engineering Innovation (EEi) stream or Computer Engineering Innovation (CEi) stream.

“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.”

That is a degree from Queen’s.
ece.queensu.ca
Computer Engineering MAJOR MAP

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!
- GET THE COURSES YOU NEED
- GET RELEVANT EXPERIENCE
- GET CONNECTED WITH THE COMMUNITY
- GET THINKING GLOBALLY
- GET READY FOR LIFE AFTER GRADUATION

2ND YEAR
- You will take the second EDPS course - APSC200, plus one Complementary Studies course. For CEI students, the Complementary Studies course required is Introduction to Business for Entrepreneurs.
- GET THE COURSES YOU NEED
- GET RELEVANT EXPERIENCE
- GET CONNECTED WITH THE COMMUNITY
- GET THINKING GLOBALLY
- GET READY FOR LIFE AFTER GRADUATION

3RD YEAR
- You will also take the Electrical and Computer Engineering Design Course. You will also need to take 2 Technical Electives, plus one Complementary Studies course. CEI students take two predetermined Complementary Studies courses.
- GET THE COURSES YOU NEED
- GET RELEVANT EXPERIENCE
- GET CONNECTED WITH THE COMMUNITY
- GET THINKING GLOBALLY
- GET READY FOR LIFE AFTER GRADUATION

4TH OR FINAL YEAR
- All Computer Engineering students follow up their ELEC 390 ECE Design course with the Computer Engineering Project course (ELEC 498).
- Consider applying to do a 12-16 month QUIP internship.
- Consider applying for the combined BASc/MASc opportunity.
- 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.
- Where could I go after graduation?
- Aerospace software
- Ambient intelligence
- AI software
- Autonomous control systems
- Banking Automation Systems
- Big Data Analyst
- Biomedical Engineering
- Business systems consultant
- Chip architect
- Computer architecture
- Computer vision and optical processing
- Cyber security
- Data compression
- Database engineering
- Deep Learning
- Electronic commerce
- Financial technology
- Game development
- Health analytics
- Internet of Things
- Integrated circuit design
- Machine learning
- Medical informatics
- Mechatronics
- Natural language processing
- Network security
- Robotics
- Telecommunications
- Wearable technology

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

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Computer Engineering

Succeed in the workplace

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

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 Career Services workshops.

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; just a quick drive to Toronto, Montreal, Ottawa and even New York. A university with more clubs per capita than any other university in Canada, and 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.