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, artificial intelligence, or mechatronics streams of specialization, and complement your core knowledge with advanced topics in electrical and computer engineering.

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

Smith Engineering ADMISSIONS
Students apply to Smith Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary school prerequisites include 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
Smith Engineering 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. Smith Engineering 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
- Artificial Intelligence
- Machine Learning
- 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 Smith Engineering. Students apply directly from OUAC with admission requirements for ECEi being the same as QSE.

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
Understanding of Ambient intelligence
Natural language processing
Oral and written communication
Autonomous control systems
Integrated circuit design
Computer architecture
Knowledge of
Analytical and
Computer vision and optical
Medical informatics
Wearable technology
Game development
Cybersecurity
Aerospace software
Database engineering
Biomedical Engineering

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.

2023-2024

Computer Engineering MAJOR MAP

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

GET THE COURSES YOU NEED

1ST YEAR
Smith 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 the second EDPS course – APSC200, plus one Complementary Studies course. CEI students take Introduction to Business for Entrepreneurs, plus an additional Complementary Studies Course.

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.

4TH OR FINAL YEAR
All Computer Engineering students follow up their ELEC 390 ECE Design course with the Computer Engineering Project course (ELEC 498).
You will also need to choose approximately 7-8 Technical Electives (totaling 22.5 units), plus one Complementary Studies course. You may also take a Research Project course (ELEC 497).
For CEI, the Complementary Studies course is Pitching and Launching Your Venture.

GET READY FOR LIFE AFTER GRADUATION

Grasping 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.

GET THE COURSES YOU NEED

FOR LIFE AFTER GRADUATION

2023-2024

Computer Engineering MAJOR MAP

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

GET THE COURSES YOU NEED

1ST YEAR
Smith 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 the second EDPS course – APSC200, plus one Complementary Studies course. CEI students take Introduction to Business for Entrepreneurs, plus an additional Complementary Studies Course.

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.

4TH OR FINAL YEAR
All Computer Engineering students follow up their ELEC 390 ECE Design course with the Computer Engineering Project course (ELEC 498).
You will also need to choose approximately 7-8 Technical Electives (totaling 22.5 units), plus one Complementary Studies course. You may also take a Research Project course (ELEC 497).
For CEI, the Complementary Studies course is Pitching and Launching Your Venture.

GET READY FOR LIFE AFTER GRADUATION

Grasping 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.

EMPLOYABILITY SKILLS

Smith Engineering will give you valuable skills to boost your employability:
- 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

WHERE COULD I GO AFTER GRADUATION?

- Aerospace software
- Ambient intelligence
- AI software
- Autonomous control systems
- Banking Automation Systems
- Biomedical Engineering
- Computer architecture
- Computer vision and optical processing
- Cybersecurity
- Database engineering
- Game development
- Integrated circuit design
- Medical informatics
- Mechatronics
- Natural language processing
- 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.
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.

Why study in Kingston?

For over 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 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.