Get to know

MATHEMATICS AND ENGINEERING

This one-of-a-kind program in Canada teaches highly sophisticated mathematical approaches to engineering issues. As a Mathematics and Engineering student, you will study pure and applied math along with engineering courses in your chosen area of specialization. You will learn to analyze and solve engineering problems requiring superior math skills, such as those involving modern communications, control, and mechatronic systems.

Degree OPTIONS

Bachelor of Science in Engineering
Bachelor of Science in Engineering with Professional Internship
Option in Applied Mechanics / Computing and Communications / Systems and Robotics

“Our program’s versatile graduates have the solidity of an engineering degree, plus the flexibility afforded by their having the exceptional analytical skills demanded by the strong mathematics component of the program.”

Queen’s ADMISSIONS

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include six 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 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

Mathematics and 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:

- Number Theory and Cryptography
- Lagrangian Mechanics, Dynamics, and Control
- Coding Theory
- Stochastic Processes and Applications
- Modern Control Theory
- Information Theory
- Optimization Theory and Applications

Acquire Skills. Gain Experience. Go Global. That is a degree from Queen’s.

mast.queensu.ca
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.
- Courses include: Algebraic Structures, Differential Equations, Advanced Calculus, Real Analysis, and Linear Algebra.
- You will take the second EDPS course – APSC200. Your other 5-6 courses depend on your option.

2ND YEAR
- Look into summer jobs related to mathematics and engineering by talking to the department or Career Services about work through SWEP or NSERC.
- Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen’s Innovation Connector Summer initiative (QICSI).
- Consider joining an intramural sports or an athletics team. Check out the Athletics & Recreation site.
- Get involved with the Engineering Society (ENSGSC) and the Alma Mater Society (AMS).
- Start or continue volunteering with local organizations. Attend conferences such as the Queen’s Engineering Competition (QEC).
- Attend information sessions and industry events on campus.

3RD YEAR
- Stay during the summer as an assistant to a faculty member or apply for external research opportunities. Apply for NSERC USRA positions in the department of physics.
- Consider applying to do a 12-16 month QUIP internship between your third and fourth year.
- Courses include: Functions of a Complex Variable, Control, Mathematical Methods for Engineering & Physics, Engineering Design & Practice, and Engineering Economics.
- Your other 6-7 courses depend on your option.

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.
- Courses include: Mathematics & Engineering Seminar and the Engineering Mathematics Project course.
- Your remaining courses will depend on your option! Complete all the required courses based on your academic plan and option, and you are set to graduate.

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

WHERE COULD I GO AFTER GRADUATION?
- Aerospace systems
- Artificial intelligence
- Astronomy
- Auditing
- Banking
- Biomedical engineering
- Business administration and management
- Computer Engineering
- Computer programming
- Credit Management
- Cryptology
- Data control
- Data Mining
- Data Processing
- Demography
- Education
- Electronic
- Fibre and Laser Electro-Optics
- Financial Analysis
- Information systems
- International Development
- Law
- Manufacturing
- Mechatronics
- Medicine
- Microprocessing
- Robotics
- Satellite communications
- Securities
- Signal processing
- Software Design
- Surveying and Cartography
- Telecommunications

CAUTION:
This map is meant as a guide to provide suggestions throughout your university career. The activities, resources, and careers mentioned are possibilities – you are not restricted to them and you don’t have to follow this exact timeline. Everyone (including you!) will find their own unique path through their degree at Queen’s and beyond.

Visit careers.queensu.ca/majormaps.html for the online version with links!
Mathematics and Engineering

MAJOR MAP

How to use this map
• Got questions about careers and classes?
• Feeling a little lost or overwhelmed by choices?
• Wondering what you are “supposed” to be doing?

Use this map to plan for success in five overlapping areas of career and academic life. Each map helps you explore possibilities, set goals and track your accomplishments. To make your own custom map, use the My Major Map tool.

Don’t stress if you haven’t done all of the suggested activities. The map is not a prescription – it’s a tool for finding your own way at Queen’s.

Getting what you need to succeed in the workplace

WHAT DO EMPLOYERS WANT?
In a recent survey from the Canadian Council of Chief Executives the top 6 skills sought by employers were:
1. People skills
2. Communication skills
3. Problem-solving skills
4. Analytical abilities
5. Leadership skills
6. Industry-specific knowledge

HOW DO I GET THE SKILLS I NEED?
It is important to develop a balanced skill set – many of which you will develop during your studies. To stand out, take advantage of experiential learning through the multitude of clubs and activities in and around Queen’s. Check out the Get Relevant Experience section of this map.

WHAT CAN I LEARN STUDYING MATHEMATICS AND ENGINEERING AT QUEEN’S?
• Proficiency in mathematics and quantitative analysis
• Understand the links between advanced mathematical concepts and their practical engineering applications
• Knowledge of theory and methods in applied mechanics, computing and communications, control and communications or robotics
• Ability to create and use sophisticated mathematical models
• Communicate quantitative ideas with clarity through writing and speaking
• Analytical mindset – develop mathematical habits of mind and a logical approach to problem solving
• Persistence – approach problem solving with persistence and a willingness to try multiple approaches
• Check out testimonials at www.mast.queensu.ca/meng/undergrad/testimonials.php

WHAT MAKES ME SPECIAL?
No one will get exactly the same experience as you. Take the time to think about what skills you have developed to be able to best explain them with compelling examples in future applications to employers and further education. For help with this, check out the Career Services skills workshop.