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 mathematics along with engineering courses in your chosen area of specialization. You will learn to analyze and solve engineering problems requiring superior mathematics skills, such as those involving modern communications, control, and mechatronic systems.

Degree OPTIONS

Bachelor of Applied Science

Bachelor of Applied Science with Professional Internship

Option in Applied Mechanics / Computing and Communications / Systems and Robotics

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.

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

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.

“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.”

That is a degree from Queen’s.
mast.queensu.ca/meng
**Mathematics and Engineering**

**MAJOR MAP**

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

### 2017-2018

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**GET THE COURSES YOU NEED**

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<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
<th>4TH OR FINAL YEAR</th>
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<td>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!</td>
<td>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.</td>
<td>Courses include: Functions of a Complex Variable, Control, Mathematical Methods for Engineering &amp; Physics, Engineering Design &amp; Practice, and Engineering Economics. Your other 6-7 courses depend on your option.</td>
<td>Courses include: Mathematics &amp; Engineering Seminar and the Engineering Mathematics Design 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.</td>
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**GET RELEVANT EXPERIENCE**

- Join teams or clubs on campus such as the Space Engineering Team (SET), the Queen’s First Robotics Team (QFR-T), and the Math Investigations Program.
- See the AMS Clubs Directory or the Queen’s Get Involved page for more ideas.
- Look into summer jobs related to mathematics and engineering by talking to the department or Career Services about work through SWEF or NSERC.
- Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen’s Innovation Connector Summer Initiative (QICSI).
- 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 Mathematics and Statistics.
- Consider applying to do a 12-16 month QUIP internship between your third and fourth 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 Career Services workshops for help.

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**GET CONNECTED WITH THE COMMUNITY**

- Volunteer on or off-campus with different community organizations, such as ENGSO (Engineering Society) and Engineers without Borders (EWB).
- Consider joining an intramural sports or an athletics team. Check out the Athletics & Recreation site.
- Get involved with the Engineering Society (ENGSO) 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.
- Do some targeted networking with alumni working in careers of interest by joining the Linkedin group Queen’s Connects Career Network.
- Attend the Canadian Undergraduate Mathematics Conference (CUMC).
- Consider joining professional associations like Ontario Society for Professional Engineers, the Canadian Applied and Industrial Mathematics Society (CAIMS) and IEEE Robotics and Automation Society.
- Join groups on Linkedin reflecting specific careers or topics of interest in Mathematics and Engineering.
- International students interested in staying in Canada can speak with an International Student Advisor.

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**GET THINKING GLOBALLY**

- Speak to a QUIC advisor or get involved in their programs, events and training opportunities.
- Prepare for work or studies in a multi-cultural environment by taking QUIC’s Intercultural Competency Certificate, and research possible immigration regulations.
- Is an exchange in your future? Start thinking about where you would like to study abroad.
- Build your intercultural competence by getting involved with other cultures or by practicing or improving your language skills.
- 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.

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**GET READY FOR LIFE AFTER GRADUATION**

- Grappling 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.
- Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as Career Opportunities in Engineering. For more information check out Career Cruising or by finding and connecting with alumni on LinkedIn.
- Attend the Engineering and Technology Fair held by Career Services.
- 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 Services and the Mathematics and Engineering faculty.
- Assess what experience you’re lacking and fill in gaps with volunteering, clubs, or internships – check out Career Services workshops for help.

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

MAJOR MAP

Succeed in the workplace

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.

What can I learn studying MATHEMATICS AND ENGINEERING?

- 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 mast.queensu.ca/meng/undergrad/testimonials.php

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.