# Mathematics and Engineering

# 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 and control systems.

### Degree OPTIONS

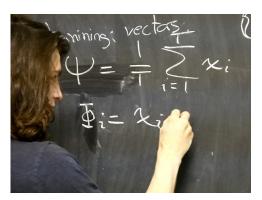
Bachelor of Applied Science in Engineering

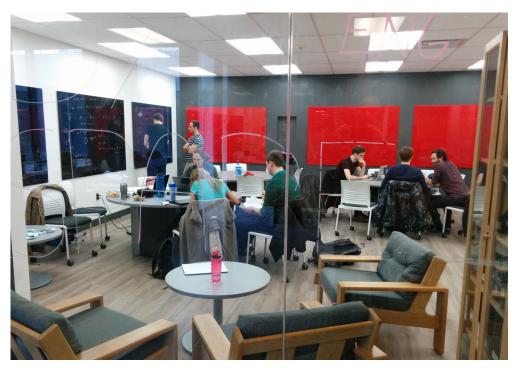
Bachelor of Applied Science in Engineering with Professional Internship

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 these 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.





"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."

### 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.

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:

- · Control Theory
- Continuum Mechanics with Applications
- Information Theory
- Data Compression and Source Coding
- Optimization and Control of Stochastic Systems
- Optimization Theory with Applications to Machine Learning
- Stochastic Processes and Applications
- Introduction to Coding Theory
- Number Theory and Cryptography
- Statistical Learning

Course HIGHLIGHTS

Acquire Skills. Gain Experience. Go Global.

That is a degree from Queen's.

queensu.ca/mathstat/mthe

### Mathematics and Engineering MAJOR MAP

Queen's

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

	1ST YEAR	2ND YEAR	3RD YEAR	4TH OR FINAL YEAR
THE .				
DURSES DU NEED	Queen's Engineering first year is common – courses include: Physics, Chemistry, Calculus,	Courses include: Algebraic Structures, Differential Equations, Advanced Calculus,	Courses include: Functions of a Complex Variable, Mathematics of Engineering	Courses include: Mathematics & Engineering Seminar and the Engineering
	Algebra, Graphics, Computing, and Earth	Real Analysis, and Linear Algebra.	Systems, Probability, Engineering Design &	Mathematics Design Project course.
	Systems Engineering.	You will take the second EDPS course –	Practice, and Engineering Economics.	Your remaining courses will depend on
	Also APSC100, the entry level course in our	APSC200.	Your other 6-7 courses depend on your option.	your option!
	Engineering Design and Practice Sequence (EDPS), focusing on problem solving,	Your other 5-6 courses depend on your option.	· ·	Complete all the required courses based on your academic plan and option, and
	experimentation principles, and finishing off	option.		you are set to graduate.
	with a team-based engineering project.			Z
	Discipline selection will take place in February!	_	_	<u> </u>
T RELEVANT PERIENCE	Join teams or clubs on campus such as the	Look into summer jobs related to mathematics and engineering by talking to	Stay during the summer as an assistant to a faculty member or apply for external	Investigate requirements for full-time jobs or other opportunities related to careers of
	Space Engineering Team (QSET), the Queen's First Robotics Team (QFRT), and the Math	the department or Career Services about work through <u>SWEP</u> or <u>NSERC</u> .	·	interest.
	Investigations.	Take more responsibility within different clubs	Mathematics and Statistics.	Assess what experience you're lacking
	See the <u>AMS Clubs Directory</u> or the <u>Queen's</u>	or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen's	Consider applying to do a 12-16 month	and fill in gaps with volunteering, clubs, or internships – check out Career Services
	Get Involved page for more ideas.	Innovation Connector Summer Initiative.	fourth year	workshops for help.
				Z
ENGAGED I THE	Volunteer on- or off-campus with different	Get involved with the Engineering Society (ENGSOC) and the Alma Mater Society (AMS).	Do some targeted networking with alumni	Consider joining professional associations like Ontario Society for Professional Engineers, the
OMMUNITY	community organizations, <u>Engineers without</u> <u>Borders</u> (EWB).	·	the LinkedIn group Queen's Connects	Canadian Applied and Industrial Mathematic Society, and IEEE Robotics and Automation
	Consider joining an intramural sports or an	Start or continue volunteering with local organizations. Attend conferences such as	( areer Network	Society.
	athletics team. Check out the <u>Athletics &amp; Recreation site</u> .	the Queen's Engineering Competition (QEC). Attend information sessions and industry	NA II II C C (CIINAC)	Join groups on LinkedIn reflecting specific careers or topics of interest in Mathematics a
	ixed editori site.	events on campus.		Engineering.
		>	>	~
T ENGAGED OBALLY	Speak to a QUIC advisor or get involved in their programs, events, and training	Is an exchange in your future? Start thinking about where you would like to study abroad.	Build your intercultural competence by	International students interested in staying
	opportunities.	about where you would like to <u>study abroau</u> .	by practicing or improving your language	Student Advisor
	Prepare for work or studies in a multi-cultural			ທ Z
	environment by taking the <u>Intercultural</u> <u>Awareness Training Certificate</u> hosted by			0
	QUIC and FDISC.			
ET CAREER EADY	Grappling with program decisions? Go to the Orientation Evenings held by different	Explore different careers of interest in the Career Services Career Advising and Resource	Start focusing on areas of interest. Research education requirements for careers of	Apply to jobs or future education, or make plans for other adventures. Get help
	Engineering departments and attend the	Area. For more information check out <u>Career</u>	interest. If needed, prepare to take any	from Career Services with job searching,
	various <u>Career Fairs</u> during the year.	Cruising.	required tests (like the LSAT or GMAT) and	resumes, interviews, grad school

get help thinking about grad school from

Career Services and the Mathematics and

Engineering faculty.

### **Knowledge & Workplace Skills**

Your time at Queen's will give you valuable skills to boost your employability, including:

- 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 here

### Career Possibilities

- Aerospace Systems
- Artificial Intelligence and Machine Learning
- Biomedical Engineering
- Computer Engineering
- Computer Vision and Image processing
- Control Systems Engineering
- Cryptography
- Data Analysis and Data Mining
- Fibre and Laser Electro-Optics
- Financial Analysis
- Mechatronics
- Satellite Communications
- Securities

applications, or other decisions.

Software Design

Taking time to explore career options, build experience, and network can help you have a smoother transition to the world of work after graduation.

 $\mbox{*some}$  careers may require additional training. Listed careers are suggestions only.

### How to use this map

Get some help deciding by visiting <u>Career</u>

Attend the **Engineering and Technology Fair** 

held by Career Services.

## Mathematics and Engineering



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.



Faculty of Engineering and Applied Science Jeffery Hall 48 University Avenue (613) 533-2390 queensu.ca/mathstat/mthe math.engineering@queensu.ca

### QUIPQUEEN'S UNDERGRADUATE

#### START DATES

in May, September, or January

#### POSITIONS

are paid and full-time

### **WORK TERMS**

are 12-16 months long



- Graduate with a "Professional Internship" degree
- Learn about current advances, practices and technologies in business and industry.
- Test drive a career, earn a competitive salary, and get real world experience.

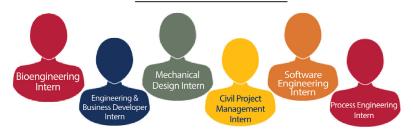
**ELIGIBILITY** 

- 2nd or 3rd Year Students
- Minimum GPA of 1.9



- Gain a year of career-related work experience.
- Build network connections.
- Receive support from Queen's staff in job search and during internship.

### SAMPLE PAST INTERNSHIPS



For more information, contact quip@queensu.ca or visit the Program Website.

### Why study in Kingston?

Since 1841, 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

n leve doser than you to 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 London / 7 hrs CANADA Oueen's Beijing / 15 hrs - and graduate Dubai / 14 hrs with a degree Calgary / 4 hrs Vancouver / 5 hrs that is globally recognized Halifax / 2 hrs San Francisco / 5.5 hrs Kingston among the Denver/3 hrs best. New York / 1.5 hrs STATES Dallas / 3.5 hrs

Atlanta / 2 hrs

Bermuda / 2 hrs