Get to know MECHANICAL ENGINEERING

The domain of mechanical engineers is truly vast because they are needed everywhere machines are, and at every stage of design, manufacturing, construction and research. In this program you will study basic engineering courses as well as practical courses in machine design, robotics and manufacturing methods. Hands-on design is integral to this program. You may be involved in designing artificial joints, or even a Formula race car, depending on your specialization. If you choose the Materials option, you’ll study the exciting developments in materials and nanotechnology.

“Students are encouraged to participate in national design competitions in order to broaden their educational experience including the solar design team, the Formula racing car, the Mini Baja all terrain vehicle and the Aerodesign cargo aircraft, and others.”

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, Advanced Functions 4U, Chemistry 4U, and Physics 4U are all required. A final competitive minimum grade of 80% must be obtained in all courses. 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.

Degree OPTIONS

Bachelor of Applied Science in Engineering

Bachelor of Applied Science in Engineering with Professional Internship

Option in General / Materials / Biomechanical Engineering

Course HIGHLIGHTS

Mechanical 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:

• Biomechanical Product Development
• Computer-Aided Design
• Bio-Materials
• Mechatronics Engineering
• Airplane Aerodynamics
• Musculoskeletal Biomechanics
• Nano-Structured Materials
**2020-2021**

**Mechanical Engineering MAJOR MA**

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

### 1ST YEAR

**GET THE COURSES YOU NEED**

- 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 RELEVANT EXPERIENCE**

- Join teams or clubs on campus such as the Queen’s Project on International Development or the First Robotics Competition.
- See the AMS Clubs Directory or the Queen’s Get Involved page for more ideas.

**GET CONNECTED WITH THE COMMUNITY**

- Volunteer on or off-campus with different community organizations, such as Let’s Talk Science (LTS) and Engineers without Borders (EWB). Join professional associations like Professional Engineers Ontario (PEO), Canadian Society of Mechanical Engineers (CSME), Society of Manufacturing Engineers (SME) as a student member -- it’s often free.

**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 the Intercultural Awareness Training Certificate hosted by QUIC and FDISC.

**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.

### 2ND YEAR

**GET THE COURSES YOU NEED**

- You will take the second EDPS course – APSC 200
- Students decide to enroll into one of the following options: ME1 – General, ME2 – Materials, or ME3 – Biomechanical.

**GET RELEVANT EXPERIENCE**

- Look into summer jobs by talking to the dept. or Career Services about work through SWEP or NSERC. Popular project teams include Aero Design, Hyperloop, Formula SAE, Baja SAE and Rocket Engineering Team. Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen’s Innovation Connector Summer Initiative.

**GET CONNECTED WITH THE COMMUNITY**

- Get involved with the Engineering Society (ENGSOc) or with Queen’s Mechanical and Materials Engineering Executive (MechExec).
- Start or continue volunteering with organizations such as the Conference on Industry Resources: Queen’s University Engineering (CIRQUE).

**GET THINKING GLOBALLY**

- Is an exchange in your future? Start thinking about where you would like to study abroad.

**GET READY FOR LIFE AFTER GRADUATION**

- 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 and the Queen’s Alumni Association.
- Attend the Engineering and Technology Fair held by Career Services.

### 3RD YEAR

**GET THE COURSES YOU NEED**

- Courses include Mechanics, Dyn Design, Heat Tr, Digital Systems
- ME1 students w/ thermodynamic students will co-processing and ME3 students w/ biomechanical

**GET RELEVANT EXPERIENCE**

- Stay during the faculty member opportunities. Join in the department Engineering.
- Apply for a 12-1 than half your cl third and fourth

**GET CONNECTED WITH THE COMMUNITY**

- Do some target working in care
- LinkedIn group
- Attend confer Competition (Q EngSoc.)

**GET THINKING GLOBALLY**

- Build your inten involved with o improving your

**GET READY FOR LIFE AFTER GRADUATION**

- Start focusing o education requi needed, prepar the LSAT or GM grad school for Career Services.

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

3RD YEAR

Career Services. grad school and get needed, prepare to take any required tests (like LSAT or GMAT) and get education requirements for careers of interest. If Start focusing on areas of interest. Research EngSoc. Competitions like the LinkedIn group Queen's Connects. Attend conferences like the Queen's Engineering Society of Mechanical Engineers (SME), Society of Manufacturing Engineers (SME). Join groups on LinkedIn reflecting specific careers or topics of interest in Mechanical Engineering.

4TH OR FINAL YEAR

Courses include either Capstone Team Project: Conceive & Design; Team Project: Implement and Operate; and a selection of technical electives based on your option. Choose another 6 or 7 technical courses depending on your option, three complementary studies courses, and you are set to graduate!

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.

Consider joining professional associations like Professional Engineers Ontario (PEO), Canadian Society of Mechanical Engineers (CSME), Society of Manufacturing Engineers (SME). Join groups on LinkedIn reflecting specific careers or topics of interest in Mechanical Engineering.

International students interested in staying in Canada can speak with an International Student Advisor.

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.

Employability skills

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

- Ability to apply science fundamentals to practical problems
- Proficiency in mathematics and quantitative analysis
- Innovation and implementation skills embodied in the CDIO paradigm: Conceive, Develop, Implement and Operate
- Time and resource management
- Excellent technical writing and communication skills
- Engineering design skills
- Experience and capability in employing various information sources for solving engineering problems
- Ability to work independently and in a team on a project

Where could I go after graduation?

Your degree could take you in lots of interesting directions including:

- Aviation and aircraft management
- Biomechanics
- Biomedical technology
- Business administration and management
- Industrial engineering
- Information technology
- Materials engineering
- Metallurgical engineering
- Nuclear engineering
- Occupational health and safety
- Product design
- Renewable resources and sustainability
- Research analyst
- Robotics
- Sound engineering
- Structural analyst

Taking time to explore career options, build experience, and network can help you have a smoother transition to the world of work after graduation. Please note: some careers may require additional training or education.

*some careers may require additional training. Careers listed here are only suggestions.

* This map is intended to provide suggestions for activities and careers, but everyone's abilities, experiences, and constraints are different. Build your own Major Map using our online My Major Map tool.
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.

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 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 awarded 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. 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.

We’re closer than you think.