Mechanical Engineering

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

That is a degree from Queen’s.
me.queensu.ca
**Mechanical Engineering**

**MAJOR MAP**

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

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**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 APSC 100, 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 Rocketry 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 PDISC.

- 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.

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**2ND YEAR**

- Courses include: Solid Mechanics, Mathematics + Computational Tools, Manufacturing Methods, Thermodynamics, Materials, Electronic Circuits + Motors, Mechatronics, Measurement for Mechatronics, Kinematics & Dynamics and Fluid Mechanics
  - 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.

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**3RD YEAR**

  - ME1 Students will continue with advanced thermodynamics and fluid mechanics. ME2 Students will continue with additional materials processing and fracture mechanics courses.
  - ME3 Students will dive into the world of biomechanical engineering.

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**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 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 Social Media reflecting specific careers or topics of interest in Mechanical Engineering. Don’t forget about the Queen’s Alumni Association.

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**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 CIDO 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

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Where could I go after graduation?

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

- Biomechanics
- Biomedical technology
- Business administration and management
- Consulting
- Design optimization
- Industrial engineering
- Information technology
- Materials engineering
- Mechatronics
- Metallurgical engineering
- Nuclear engineering
- Occupational health and safety
- Product design
- Renewable resources and sustainability
- Robotics
- Sound engineering

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

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Mechanical Engineering

MAJOR MAP

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.