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.

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**

**GET THE COURSES YOU NEED**

<table>
<thead>
<tr>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
<th>3RD YEAR</th>
<th>4TH OR FINAL YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<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: Solid Mechanics, Mathematics + Computational Tools, Manufacturing Methods, Thermodynamics, Materials, Electronic Circuits + Motors, Mechatronics, Measurement for Mechatronics, Kinematics &amp; Dynamics and Fluid Mechanics. You will take the second EDPS course APSC 205 students decide to enroll into one of the following options: ME1, General, ME2 Materials, or ME3 Biomechanical.</td>
<td>Courses include: Engineering Economics, Solid Mechanics, Dynamics &amp; Vibration, Machine Design, Heat Transfer, Automatic Controls, and Digital Systems for Mechatronics. 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.</td>
<td>Courses include either Capstone Team Project: Conceive &amp; Design; Team Project: Implement and Operate; and a selection of technical electives based on your option. On top of your technical electives, you will choose 3 or 4 complementary studies courses to complete your degree.</td>
</tr>
</tbody>
</table>

**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. Look into summer jobs by talking to the dept. or Career Services about work through SWEF or NSERC. Popular project teams include 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. 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 Mechanical and Materials Engineering. Apply for a 12-16 month QUIP internship. More than half your class will apply to go out between 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. 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. 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 COID 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:

- 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
- 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.

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.

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

Why study in Kingston?

For over 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 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 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 – and graduate with a degree that is globally recognized among the best.