Get to know MECHANICAL ENGINEERING

The domain of mechanical engineers is truly vast because they are needed wherever 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.

Sample past internships

- **Distribution**: An engineering intern can help with short-term decisions about when do you want to go after your degree? School while working through your degree can help with short-term decisions about courses and experiences, but also help you keep motivated for success.

- **Engineering & Applied Science**
- **Geothermal Engineering**
- **Nanocomposites**
- **Scholarship Development**
- **Mechanical**

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

- **Graduate with “Professional Internship” on your degree.**
- **Gain a year of career-related work experience.**
- **Build network connections.**
- **Receive support from Queen’s staff in job search and during internship.**

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

**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 BIC 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.

**Mechanical Engineering**

**MAJOR MAP**

**Program Overview**

- Graduate with "Professional Internship" on your 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

**Why Quip?**

- 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**

- Distribution
- Engineering & Applied Science
- Geothermal Engineering
- Nanocomposites
- Scholarship Development
- Mechanical

**Admissions**

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include five 4U and 40S 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, Computer Science 4U, Earth and Space Science 4U. A final grade of 70% must be obtained in English 4U. Applicants outside of Ontario may have additional requirements.

**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

**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
- Turbomachinery
- Mechatronics Engineering
- Airplane Aerodynamics
- Musculoskeletal Biomechanics
- Nano-Structured Materials

**Acquire Skills. Gain Experience. Go Global.**

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>
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<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: Statics &amp; Solid Mechanics, Differential Equations, Manufacturing Methods, Thermodynamics, Materials, Electric Circuits &amp; Machines, Numerical Methods, Measurement for Mechatronics, Kinematics &amp; Dynamics and Fluid Mechanics. You will take the second EDPS course – APSC 200 Students decide to enroll into one of the following options: MEI – General, ME2 – Materials, or ME3 – Biomechanical.</td>
<td>Courses include: Engineering Economics, Solid Mechanics, Dynamics &amp; Vibration, Machine Design, Heat Transfer, Automatic Controls, and Engineering Data Analysis. Your other courses will depend on your option and elective choice!</td>
<td>Courses include either Team Project: Conceive &amp; Design or Multi-disciplinary Industry Engineering Design Project. ME3 students will also take the Team Project: Implement &amp; Operate course. Choose another 6 or 7 technical courses depending on your option, three complementary studies courses, and you are set to graduate!</td>
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### 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 SWeP or NSERC. Popular project teams include Aero Design, Autonomous Sailboat, Formula SAE, Baja SAE and Eco-Marathon team. Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen's Innovation Connector Summer Initiative.
- 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) as a student member -- it's often free.
- Get involved with the Engineering Society (ENSOC) or with Queen's Mechanical and Materials Engineering Executive (M4Exe). Start or continue volunteering with organizations such as the Commerce & Engineering Environmental Conference (CEEC).
- Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen's Connects Career Network.
- Join groups on LinkedIn reflecting specific careers or topics of interest in Mechanical Engineering.
- Consider volunteering 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.
- 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 QUIC and Four Directions Aboriginal Student Centre's Training Certificate, and research possible immigration regulations.
- Grappling with program decisions? Go to the Orientation Evenings: held by different Engineering departments and attend the various Career Fairs during the year.
- 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.
- 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 your course instructors and Career Services.
- 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.

### GET CONNECTED WITH THE COMMUNITY

- Volunteer on an 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.
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### GET THINKING GLOBALLY

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

### GET READY FOR LIFE AFTER GRADUATION

- What about life after graduation? In the four years you will have taken courses in:
  - Team Project: Conceive & Design or Multi-disciplinary Industry Engineering Design Project. ME3 students will also take the Team Project: Implement & Operate course. 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.
  - 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.

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

*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.

Employability skills

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

- Proficiency in mathematics and quantitative analysis
- Innovation and implementation skills embedded in the CIIO paradigm: Conceive, Develop, Implement and Operate
- Time and resource management
- Excellent technical writing and communication skills
- Engineering design skills
- Ability to apply science fundamentals to practical problems of mechanical engineering
- 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.