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.

“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.”

Degree OPTIONS

Bachelor of Science in Engineering
Bachelor of Science in Engineering with Professional Internship
Option in General / Materials / Biomechanical Engineering

Queen’s ADMISSIONS

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include six 4U and 4M 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.

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 J-Section, a special extended program for students struggling with First Year courses. Take things at a slower pace and recover in time for Second Year.

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

That is a degree from Queen’s.

me.queensu.ca
# Mechanical Engineering MAJOR MAP

## BACHELOR OF SCIENCE IN ENGINEERING | BACHELOR OF SCIENCE IN ENGINEERING WITH PROFESSIONAL INTERNSHIP

### 2015 - 2016

### GET THE COURSES YOU NEED

**1ST YEAR**

- 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!

**2ND YEAR**

- 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

**3RD YEAR**

- 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.
- Consider applying to do a 12-16 month QUIP internship between your third and fourth year.

**4TH OR FINAL YEAR**

- Courses include either Team Project: Conceive & Design or Multi-disciplinary Industry Engineering Design Project.
- ME3 students will also take the Team Project: Implement & Operate course.
- Choose another 7 or 8 technical courses depending on your option, three complementary studies courses, and you are set to graduate!

### GET RELEVANT EXPERIENCE

**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).
- 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 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.

**GET THINKING GLOBALLY**

- The Queen's University International Centre is your first stop to learn how to internationalize your degree or to leverage your existing cross-cultural experience.
- Speak to a QUIC advisor or get involved in their programs, events and training opportunities.
- Look into summer jobs by talking to the dept. or Career Services about work through SWEF 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 extracurricular. Consider entrepreneurial opportunities at programs like the Queen's Innovation Connector Summer Initiative
- Build your intercultural competence by getting involved with other cultures or by practicing or improving your language skills. Stop by QUIC for ideas to go abroad, volunteer at QUIC or attend one of their events.

**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.
- 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.
- Attend the Engineering and Technology Fair held by Career Services.
- 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 Career Services.

### CONSIDER A 12-16 MONTH QUIP INTERNSHIP

- 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 the Career Services skills workshop 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.
- Prepare for work or studies in a multi-cultural environment by taking QUIC's Intercultural Competency Certificate, and research possible immigration regulations.
- 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.

### Where could I go after graduation?

- Acoustics
- Aviation and aircraft management
- Automotives
- Biomechanics
- Biomedical technology
- Business administration and management
- Communications
- Construction
- Economics
- Education
- Electrical services
- Environmental sustainability
- Industrial engineering
- Information technology
- International development
- Manufacturing
- Materials engineering
- Market data analysis
- Medicine
- Metallurgical engineering
- Nuclear engineering
- Occupational health and safety
- Product design
- Renewable resources and sustainability
- Research analyst
- Robotics
- Sound engineering
- Structural analyst
- Transportation
- Quality assurance
- Ventilation

*Some careers may require additional training*

### Caution:

This map is meant as a guide to provide suggestions throughout your university career. The activities, resources, and careers mentioned are possibilities – you are not restricted to them and you don’t have to follow this exact timeline. Every person (including you!) will find their own unique path through their degree at Queen’s and beyond.

Visit careers.queensu.ca/majormap.html for the online version with links!
How to use this map

• Got questions about careers and classes?
• Feeling a little lost or overwhelmed by choices?
• Wondering what you are “supposed” to be doing?

Use this map to plan for success in five overlapping areas of career and academic life. Each map helps you explore possibilities, set goals and track your accomplishments. To make your own custom map, use the My Major Map tool.

Don’t stress if you haven’t done all of the suggested activities. The map is not a prescription – it’s a tool for finding your own way at Queen’s.

Getting what you need to succeed in the workplace

WHAT DO EMPLOYERS WANT?
In a recent survey from the Canadian Council of Chief Executives the top 6 skills sought by employers were:
1 People skills
2 Communication skills
3 Problem-solving skills
4 Analytical abilities
5 Leadership skills
6 Industry-specific knowledge

HOW DO I GET THE SKILLS I NEED?
It is important to develop a balanced skill set – many of which you will develop during your studies. To stand out, take advantage of experiential learning through the multitude of clubs and activities in and around Queen’s. Check out the Get Relevant Experience section of this map.

WHAT CAN I LEARN STUDYING MECHANICAL ENGINEERING AT QUEEN’S?
• Become a balanced engineer by developing a set of 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
• 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

WHAT MAKES ME SPECIAL?
No one will get exactly the same experience as you. Take the time to think about what skills you have developed to be able to best explain them with compelling examples in future applications to employers and further education. For help with this, check out the Career Services skills workshop.