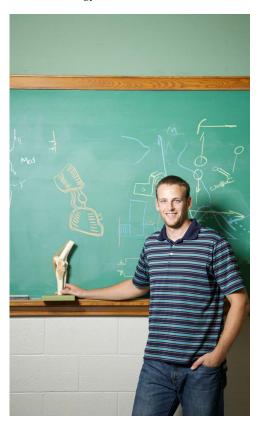
Mechanical Engineering

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

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 some help deciding by visiting Career Services.

	1ST YEAR	2ND YEAR	3RD YEAR	4TH OR FINAL 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!	Courses include: Statics & Solid Mechanics, Differential Equations, Manufacturing Methods, Thermodynamics, Materials, Electric Circuits & Machines, Numerical Methods, Instrumentation & Measurement, 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		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!	Where could I go after graduation? Acoustics Aviation and aircraft management Automotives Biomechanics Biomedical technology Business administration and management Communications
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	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.	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.	Construction Economics Education Electrical services Environmental sustainability Industrial engineering Information technology International development
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.	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 Enginnering.	Manufacturing Materials engineering Market data analysis Medicine Metallurgical engineering Nuclear engineering Occupational health and safety
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.	Is an exchange in your future? Start thinking about where you would like to study abroad. If exchange isn't for you, come talk to QUIC about some other options to gain international experience.	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.	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.	Product design Renewable resources and sustainability Research analyst Robotics Sound engineering Structural analyst Transportation
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.	Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as <i>Career Opportunities in Engineering</i> . For more information check out Career Cruising or by	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	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.	Quality assurance Ventilation *some careers may require additional training

Services.

finding and connecting with alumni on LinkedIn.

Career Services.

Attend the Engineering and Technology Fair held by

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

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.

A balanced approach leads to long-term success. While you will learn a lot from your studies, taking time to get relevant experience outside of the classroom, build your network, and gain international experience, will position you to be more competitive in your job search or grad school applications.

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, and Queen's wants you to succeed! Check out the **Student Affairs website** for available resources.

Succeed in the workplace

What employers want

The Canadian Council of Chief Executives list the top 6 skills sought by employers as:

- 1 People skills
- **2** Communication skills
- 3 Problem-solving skills
- 4 Analytical abilities
- **5** Leadership skills
- **6** Industry-specific knowledge

Take the time to think about the unique skills you have developed at Queen's, starting with the skills list here for ideas. Explaining your strengths with compelling examples will be important for applications to employers and further education. For help, check out the Career Services skills workshop.

What can I learn studying MECHANICAL ENGINEERING?

Proficiency in mathematics and quantitative analysis

- 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





DEPARTMENT OF MECHANICAL ENGINEERING

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