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 these five 4U courses, English 4U, Calculus and Vectors 4U, Advanced Functions 4U, Chemistry 4U, and Physics 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 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

Acquire Skills. Gain Experience. Go Global.

That is a degree from Queen's.

me.queensu.ca

2023-2024

Mechanical Engineering MAJOR MAP

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

	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: 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 enrol into one of the following options: ME1 General, ME2 Materials, or ME3 Biomechanical.	Courses include: Engineering Economics, Solid Mechanics, Dynamics & 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.	Courses include either Capstone Team Project: Conceive & 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.
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 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.
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 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 Conference on Industry Resources: Queen's University Engineering (CIRQUE).	Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen's Connects. Attend conferences like the Queen's Engineering Competition (QEC). Check out more options via EngSoc.	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.
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 FDISC.	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	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 in the Career Services Career Advising and Resource Area. For more information check out Career Cruising and the Queen's Alumni Association. 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 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.

CONSIDER A 12-16 MONTH QUIP INTERNSHIP

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 CDIO 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.

*some careers may require additional training. Careers listed here are only suggestions.

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.

© Career Services, Queen's University, 2023-2024

Mechanical Engineering

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.

QUIP QUEEN'S UNDERGRADUATE INTERNSHIP PROGRAM

START DATES in May, September, or January

POSITIONS are paid and full-time

WORK TERMS are 12-16 months long

PROGRAM OVERVIEW

- Graduate with a "Professional Internship" 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.

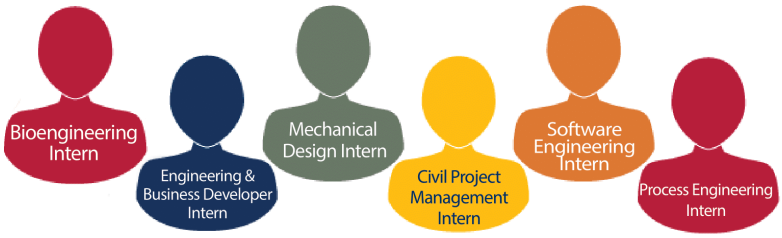
ELIGIBILITY

- 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



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.

SMITH ENGINEERING
Queen's University

Faculty of Engineering and Applied Science
McLaughlin Hall, Room 201
130 Stuart Street
(613) 533-2575
me.queensu.ca