Why GRADUATE STUDIES in BIOMEDICAL ENGINEERING?

Biomedical Engineering involves the application of engineering principles to understand, modify or control biological systems with the objective of generating solutions to health-related problems. This area is diverse and multidisciplinary, bringing in concepts from chemistry, cell biology, mechanics, biochemistry, mathematics, and physiology.

This multidisciplinarity is reflected in our collaborative biomedical engineering Master’s and Ph.D programs. These programs link the graduate programs in Chemical, Electrical and Mechanical Engineering and provide shared learning experiences with interdisciplinary content. The M.A.Sc. and Ph.D programs also bring students from a variety of backgrounds together to learn about research methodology and professional practice from world renowned research faculty in the field of Biomedical Engineering.

Why QUEEN’S?

At Queen’s, the departments of Chemical, Electrical and Computer, and Mechanical and Materials Engineering have formally collaborated to support this new graduate biomedical engineering program. Through this innovative program, our graduate students have opportunities to access courses and co-supervisors in each department, to collaborate with top researchers, and to take courses in Anatomy, Cell Biology and Biochemistry.

Graduates with a specialisation in Biomedical Engineering find employment opportunities in areas including the pharmaceutical industry, the biomedical device industry, health care support (e.g., Health Canada), as well as academic research and teaching.

“...The community feel is really important to me. I would say the resources here at Queen’s are really amazing as well as facilities. We’re really able to ask any questions and really dive deep into answering those questions.”

- Michael Shepertycky, Ph.D Candidate, Mechanical and Materials Engineering

Program STRUCTURE

- M.A.Sc (2 years, full time)
- Ph.D. (4 years, full time)

All M.A.Sc. and PhD students must fulfill course work and other requirements of their home departments, successfully complete two mandatory core courses in Biomedical Engineering (CBME 801 and 802), and undertake a thesis project in one or more of the designated research areas.

Research AREAS

- **Biomaterials** - developing natural and synthetic materials to facilitate repair of damaged or diseased tissues and organs
- **Biomechanics and Prosthetics** - studying whole body and limb biomechanics and designing medical implants and prosthetics
- **Tissue Engineering and Regenerative Medicine** - developing laboratory grown functional replacement tissues and cell encapsulation devices
- **Biomedical and Intelligent Systems** - Researching and experimenting in the areas of robotics, computer vision, discrete-event systems, nonlinear system identification, protein sequence classification, modelling and human performance monitoring

School of Graduate Studies
Create an impact
www.queensu.ca/sgs
Application FAQs

What do I need to know to **APPLY**?

- Please review the admission requirements of the appropriate home department for academic prerequisites and documentation necessary for admission into the desired graduate program.
- Applications must be submitted directly to the Queen’s School of Graduate Studies, which can be done on-line. In that application, students must identify which of the participating departments they wish to identify as their home department. Usually, this is the department aligned with the applicant’s undergraduate engineering degree.
- The on-line SGS Application Form asks “Describe (in a sentence or two) your Research Interest(s)” . This is where students should enter “Collaborative Master’s/PhD in Biomedical Engineering” to indicate their interest in the specialisation. Later in the form, students are asked to provide a “Statement of Interest”. Students can use this section to expand on the nature of their interest in Biomedical Engineering.

**DEADLINES**

- Please refer to the appropriate home department for program specific application deadlines.

What about **FUNDING**?

Fellowships and teaching assistantships are available through the University and are automatically considered upon admission. Full-time students are encouraged to seek external financial support and to apply for NSERC, CIHR, and OGS graduate scholarships.

Queen’s automatically issues a one-time $5,000 top-up to federal tri-council Master’s scholarship holders in their first year of study and a one-time $10,000 top-up to tri-council doctoral scholarship holders. For more information, see the School of Graduate Studies’ information on awards and scholarships and the department’s graduate awards page.

**CONTACT** Information

For more information, contact the representative of the Department that is best aligned with their research interests.

- **CHEMICAL ENGINEERING**
  Laura Wells
  laura.wells@queensu.ca

- **ELECTRICAL AND COMPUTER ENGINEERING**
  Evelyn Morin
  morine@queensu.ca

- **MECHANICAL AND MATERIALS ENGINEERING**
  Claire Davies
  claire.davies@queensu.ca

**BIOMATERIALS**
- Brian Amsden (Chemical Engineering)
- Tim Bryant (Mechanical and Materials Engineering)
- Lindsay Fitzpatrick (Chemical Engineering)
- Laura Wells (Chemical Engineering)

**BIOMECHANICS AND PROSTHETICS**
- Tim Bryant (Mechanical and Materials Engineering)
- Claire Davies (Mechanical and Materials Engineering)
- Kevin Deluzio (Mechanical and Materials Engineering)
- Genevieve Dumas (Mechanical and Materials Engineering)
- Il-Yong Kim (Mechanical and Materials Engineering)
- Yongjun Lai (Mechanical and Materials Engineering)
- Qingguo Li (Mechanical and Materials Engineering)
- Rick Sellens (Mechanical and Materials Engineering)

**BIOMEDICAL AND INTELLIGENT SYSTEMS**
- Michael Greenspan (Electrical and Computer Engineering)
- Keyvan Hashtrudi-Zaad (Electrical and Computer Engineering)
- Michael Korenberg (Electrical and Computer Engineering)
- Evelyn Morin (Electrical and Computer Engineering)
- Karen Rudie (Electrical and Computer Engineering)

**TISSUE ENGINEERING AND REGENERATIVE MEDICINE**
- Brian Amsden (Chemical Engineering)
- Lindsay Fitzpatrick (Chemical Engineering)
- Laura Wells (Chemical Engineering)

**WEBSITE**
my.engineering.queensu.ca/programs/bme