University of Alberta   University of Alberta Calendar 2025-2026

Graduate Programs in Biomedical Engineering

Department of Biomedical Engineering
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General Information

Research facilities and lecture courses for graduate programs are offered by the Department of Biomedical Engineering. The Department offers programs leading to the degrees of Master of Science and Doctor of Philosophy in Biomedical Engineering, as well as the Master of Science and Doctor of Philosophy with a specialization in Biomedical Sciences. The degrees differ according to the undergraduate preparation of the student, the former for students with a background in engineering or academically similar areas, and the latter in biological sciences. Under the Individual Interdisciplinary Studies program (see Conduct of Examinations) students may study and carry out their research in the Department of Biomedical Engineering and another department in the University. The Department of Biomedical Engineering is part of both the Faculty of Engineering and the Faculty of Medicine and Dentistry.

The research activities of members of the Department are directed at aspects of biomedical engineering, including but not limited to digital image processing, nano structured biomaterials, in-vivo nuclear magnetic resonance, including vascular imaging, stroke, functional magnetic resonance imaging (fMRI), as well as non-invasive biochemical analysis through spectroscopic methods, MRI of cerebral vascular disease, and restoration of function following spinal cord injury. In addition, research is performed by members of other departments who collaborate with those of the Department in areas that include adaptive controllers in medicine, aerosol inhalation and delivery, assistive technologies, biofilms, biomaterials and drug delivery, biomechanics of bone, biomechanics of walking, biomedical modeling, biophotonic and ultrasonic imaging, bracing and wheelchairs, cardiovascular biomaterials, cell and tissue cryobiology, computational neuroscience, control and restoration of motor movement, functional electrical stimulation, lab-on-a-chip, laser applications in medicine, mathematical modeling of drug delivery, mathematical modeling of the immune system, medical image processing, micro-computed tomography, modeling of biomedical processes, nano-bio-mechanical systems, nanotechnology and drug delivery, nanotechnology in medicine, oral/facial prosthetic reconstruction, orthodontic retraction appliances, rehabilitation engineering, rehabilitation robotics, resorbable implants, scoliosis and spinal column correction, spinal disorder assessment and treatment, therapeutic ultrasound and biomechanics in dentistry, tissue engineering, and ultrasound applications in medicine.

Professional Associations and Technical Societies

It should be clearly understood that an MSc or PhD awarded by the Department of Biomedical Engineering does not automatically qualify one for membership in the Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA).

Entrance Requirements

The Department's minimum admission requirements are an undergraduate degree with a grade point average of at least 3.3 in the last two years of undergraduate work (or graduate work) at the University of Alberta, or an equivalent qualification

from another institution, and a TOEFL score of 95 or equivalent on the internet-based test where applicable (refer to English Language Requirement).

Financial Assistance

Students who receive scholarships from external agencies, including the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canadian Institutes of Health Research (CIHR), and the Alberta Heritage Foundation for Medical Research (AHFMR), may hold these awards in the Department of Biomedical Engineering. Exceptionally qualified applicants may be nominated by the Department for a master's thesis-based Scholarship, a PhD Scholarship, or an FS Chia PhD Scholarship. Information concerning these scholarships is available at www.gradstudies.ualberta.ca.

Graduate Program Requirements

Master's Programs

- Master of Science (Biomedical Engineering)

Doctoral Programs

- Doctor of Philosophy (Biomedical Engineering)

Graduate Courses

Graduate courses can be found in Course Listings, under the following subject headings:

Biomedical Engineering (BME)
Chemical Engineering (CH E)
Electrical and Computer Engineering/Biomedical Engineering (EE BE)
Mechanical Engineering (MEC E)