



## Teaching/Delivery Methods

The 90-point research portfolio and the 60-point project will involve working with a research group or being seconded to industry for a supervised research project that provides specialisation in a particular aspect of medical device technology. For participants without a medical background, a clinical secondment will be used to strengthen the experiential component of their learning. Participants enrolled in the 90-point research portfolio will prepare a written thesis, while participants enrolled in the 60-point project will prepare a written project report. Both of these will be examined following the standard University of Auckland processes.

Both courses will be lecture-based and delivered as modules, each taught by the University's research specialists ensuring participants meet the multidisciplinary requirements of medical devices technology.

## Prescriptions for courses

### ENGGEN 770 Medical Devices Technology (15 points)

The course provides an overview of the Medical Devices and Technology field including innovation and advanced technologies of healthcare, devices used in the medical environment, and needs, challenges and future opportunities. The focus is placed on evidence based design and fundamental technologies from both the medical and engineering fields. The topics include: understanding the needs for specific medical devices as indicated by the World Health Organization, identifying the evidence to support development of medical devices, understanding the risks and benefits of medical device design and ethical issues surrounding the development and testing of medical devices. A number of speakers who use and develop devices will be invited

to speak about their experiences. We will seek to fill the gaps between the medical and engineering fields by working in multi-disciplinary teams. Examples of medical devices will be used in the course to address the above topics.

### ENGGEN 771 Medical Devices Practice (15 points)

This course covers the practical aspects of medical device design including regulatory requirements, international standards, safety and ethical issues, quality control and manufacturing. The course will give attendees a basic understanding of the intent and history of medical device regulation in key International markets. It will provide detailed knowledge of standards adopted to control the risk associated with medical devices and meet those regulations. It will familiarise students with accepted development process standards including risk management and general and selected product standards. Topics include the clinical trial and evaluation of medical devices, quality assurance and control design, safety issues, manufacturing and commercialisation of medical devices, and selected medical device examples to address the practical and integration issues including healthcare robotics, resuscitators, exoskeleton devices, etc.

### Medical Devices Research Project

#### ENGGEN 791A (30 points)

#### ENGGEN791B (30 points)

A structured supervised research project addressing a topic relevant to the development and commercialisation of medical devices and technologies.

### Medical Devices Research Portfolio

#### ENGGEN 793A (45 points)

#### ENGGEN 793B (45 points)

A structured supervised research portfolio addressing a topic relevant to the development and commercialisation of medical devices and technologies.

## Contact

### Faculty of Engineering

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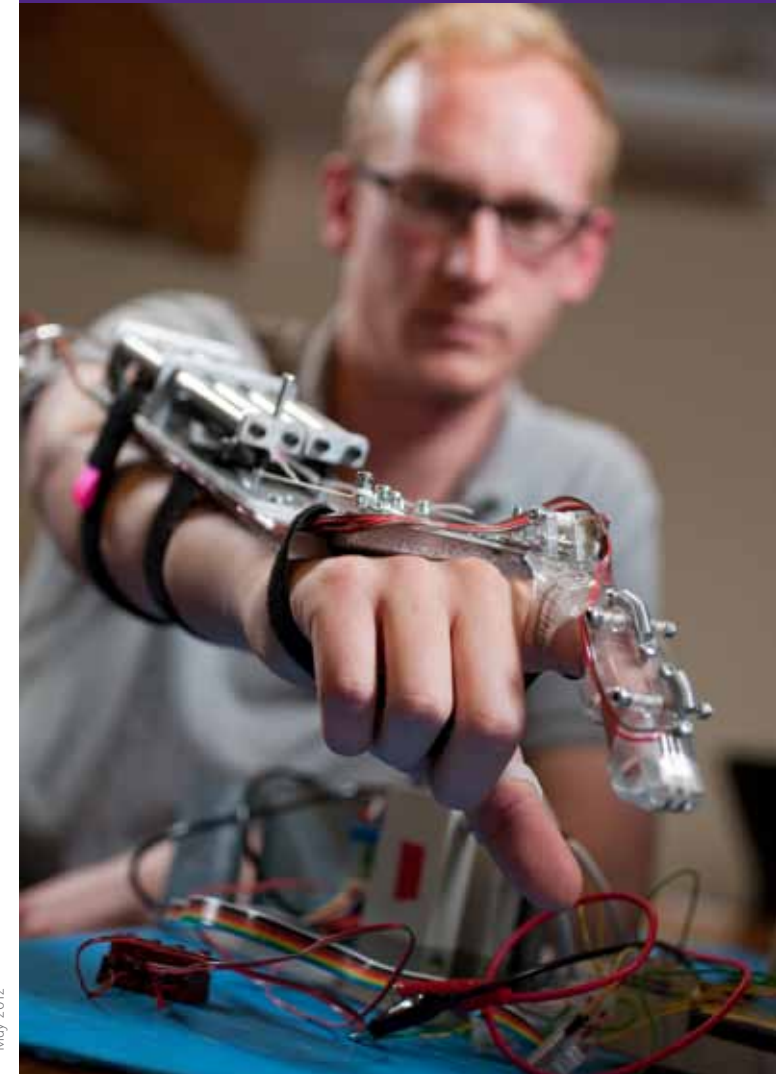
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# Master of Engineering Studies in Medical Devices and Technologies



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## Overview

Rapid growth in the global medical devices industry demands an innovative fusion of biomedical, materials sciences, manufacturing, and engineering knowledge – and The University of Auckland is responding to the challenge with a new Master of Engineering Studies programme in Medical Devices and Technologies.

The programme is aimed primarily at engineers and health professionals to provide them with the necessary broad range of knowledge in the various technologies underpinning medical devices. It will also provide essential skills in medical practices, regulatory processes, product development, and innovation. The programme is funded by the Tertiary Education Commission of New Zealand, and is a collaboration between the faculties of Engineering and Medical and Health Sciences at The University of Auckland, and the Medical Technology Association of New Zealand.

To best meet the needs of participants with different backgrounds, including those coming from industry, the programme is provided as both a Research Masters and a Taught Masters. Both options contain a significant research component that will involve working with a research group or secondment to industry. The Taught Masters option provides a wide variety of courses that participants can draw upon to best address their own areas of interest. This is a two-semester programme with flexibility for part-time enrolments.



## Employment opportunities

Graduates of the programme will be equipped with the technical, medical, ethical, regulatory and business knowledge required for innovation in medical devices and technologies, filling the large demand for these skills in the global and domestic medical devices industry.

## Enrolment

The current MEngSt enrolment regulations allow entry into this programme from a four-year Bachelor of Engineering (BE, or BE (Hons)) with grades at a level deemed satisfactory to the Dean of Engineering. Participants who have completed appropriate health professional qualifications which qualify them to apply for registration as clinicians may enter the MEngSt specialisation if they have an approved Bachelor's degree, have completed at least three years of appropriate professional experience, and have performed at a level deemed satisfactory by the Dean of Engineering. This pathway is also open to participants with an appropriate background and professional experience, such as those with a Bachelor of Science (BSc) or Bachelor of Technology (BTech).

## Curriculum

The 120-point degree will be available as both a Research Masters and a Taught Masters:

- **Research Masters:** a 90-point research portfolio and two 15-point courses
- **Taught Masters:** a 60-point research portfolio and four 15-point courses

The programme is normally two semesters and will accommodate part-time enrolments. Participants taking the Research Masters option will complete 45 points of their 90-point research portfolio in Semester 1, with the remaining 45 points of the research portfolio and 15 points core course being completed in Semester 2. Participants taking the Taught Masters option will take one core course and one elective in both Semester 1 and 2, and split their 60-point project evenly between the two semesters. The program enrolment structure is summarised in Table 1 below.

## Course structure showing typical enrolments in each semester

Research Masters:	
Semester 1	Semester 2
45 points of the 90-point research portfolio	45 points of the 90-point research portfolio
15 points: one core course	15 points: one core course
Taught Masters: either	
Semester 1	Semester 2
30 points of the 60-point research project	30 points of the 60-point research project
30 points: one core course and one elective	30 points: one core course and one elective