

MSC IN MEDICAL DEVICE DEVELOPMENT

Overview

(Joint Degree Between Munster Technological University and University College Cork)

The MSc in Medical Device Development is a full-time taught programme, which runs over one year. This is a joint programme between Munster Technological University (MTU) and University College Cork (UCC). Students make their application for the programme through MTU.

UCC Code	MTU Code	Module Run by	Module Title	Credit
AN6050	BIOE9002	UCC	Principles of Human Anatomy	5
AN6051	BIOE9003	UCC	Human Biomechanics	5
AN6052	BIOE9001	UCC	Anatomy for Biomedical Devices - Cardiovascular & Neurovascular Systems	10
AN6053	BIOE9005	UCC	Anatomy for Biomedical Devices – Orthopaedics & Musculoskeletal System	10
AN6054	INTR9025	MTU	Design Innovation	5
AN6055	MATE9001	MTU	Biomaterials for Medical Device Development	10
AN6056	MECH9010	MTU	Mechanics for Medical Device Development	5
AN6057	BIOE9004	MTU	Integrated Product and Process Design	10
AN6058	INTR9026	MTU	Research Project: Medical Device Development	30

Progression from the Postgraduate Certificate in Anatomy for Medical Device Development (NFQ Level 9, Minor Award)

Following successful completion of the Postgraduate Certificate in Anatomy for Medical Device Development (<https://ucc-ie-public.courseleaf.com/programmes/pcamdd/>), a student may progress to the MSc in Medical Device Development. Students who are successful in their application will be eligible to apply for an exemption for modules they completed on the Postgraduate Certificate in Anatomy for Medical Device Development.

Exit Award: Postgraduate Diploma in Medical Device Development (NFQ Level 9, Major Award)

Students who successfully complete taught modules to the value of 60 credits may choose to exit the programme and be awarded a

Postgraduate Diploma in Medical Device Development (<https://ucc-ie-public.courseleaf.com/programmes/pdmdd/>).

Programme Requirements

For information about modules, module choice, options and credit weightings, please go to Programme Requirements (p. 1).

Programme Requirements

Code **Title** **Credits**

Students take **90** credits as follows – **60** credits of taught modules and **30** credits of research modules:

Taught Modules

Students take **60** credits as follows:

Core Modules

AN6050	Principles of Human Anatomy	5
AN6051	Human Biomechanics	5
AN6052	Anatomy for Biomedical Devices - Cardiovascular and Neurovascular Systems	10
AN6053	Anatomy for Biomedical Devices - Orthopaedics and the Musculoskeletal System	10
AN6054	Design Innovation	5
AN6055	Biomaterials for Medical Device Development	10
AN6056	Mechanics for Medical Device Development	5
AN6057	Integrated Product and Process Design	10

Research

Students take **30** credits as follows:

Core Modules

AN6058	Research Project: Medical Device Development	30
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Total Credits **90**

Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.

Programme Learning Outcomes

Programme Learning Outcomes for MSc in Medical Device Development (NFQ Level 9, Major Award)

On successful completion of this programme, students should be able to:

- A systematic understanding of the design and engineering principles required to develop a medical device to meet a clinical need based on an understanding of the anatomy of the human body, including changes associated with pathologies and aging.
- A critical awareness of the clinical needs and a knowledge of the application of research tools for developing ideas and concepts, whilst considering the engineering and material science-based principles to select appropriate technologies required to manufacture the solutions.
- Mastery of a range of specialised research and design tools and methods of analysis in the field of clinical anatomy, material science and medical device development.
- The ability to select and apply appropriate advanced skills and analytical techniques including the ability to develop new skills in emerging techniques, as required in medical device development. The ability to undertake analysis of a design, receive feedback, analyse

and iterate, while ensuring strong rationales for decisions throughout a particular design process.

- The ability to act at a variety of professional levels; to empathise with users, to act with curiosity and to seek new perspectives; ability to research prior art, ability communicate key concepts to a multidisciplinary audience to promote design solutions and request feedback.
- The technical competence necessary to take significant responsibility for the own work and group deliverables; lead and initiate activity in the development of a medical device.
- The ability to evaluate their own learning, to reflect, identify knowledge gaps, conduct research, learn from observing others, and take responsibility for the pursuit of academic professional development pathways.
- The ability to assume personal responsibility for fostering a collaborative and innovative culture within a multidisciplinary project environment. And demonstrate the ability to technically evaluate the societal, environmental and technical impact of the life cycle of a design solution.