



MSc Bioengineering

UCD School of Electrical, Electronic & Communications Engineering

UCD School of Mechanical & Materials Engineering

Why is this course for me?

This programme is an MSc course in bioengineering, delivered in collaboration between faculty drawn from University College Dublin's Schools of Electrical, Electronic & Communications Engineering and Mechanical & Materials Engineering, along with the UCD School of Medicine and Medical Science. This programme was awarded the Gradireland Postgraduate Course of the Year Award (Engineering) in 2012. The main criterion for this award is the employability of the postgraduates.

Although the programme is particularly suited to graduates with a mechanical or electrical/electronic engineering background, the MSc in Bioengineering is accessible by students from an Engineering, Life Science or Clinical background who are mathematically able and who are interested in developing their skills in the field. The programme is delivered by engineers and clinicians with international reputations in the field and who have made a significant contribution to the development of their fields. The programme involves both formal lectures and associated laboratory work, with coursework assignments being completed following lecture content delivery.

Why study at University College Dublin?

Some of the reasons to study at UCD:

- Top 1% world university
- Ireland's leading provider of graduate education
- Ireland's largest and most international university
- Emphasis on research and innovation
- Safe, modern campus in Dublin, capital city of Ireland
- Extensive range of on-campus accommodation

UCD College of Engineering and Architecture

The UCD College of Engineering and Architecture's research and taught programmes are centred around a wide variety of activities spanning basic, strategic and applied research from the diverse range of disciplines covered by the Schools of Architecture, Biosystems Engineering; Chemical and Bioprocess Engineering; Civil, Structural and Environmental Engineering; Electrical, Electronic and Communications Engineering and Mechanical and Materials Engineering.

We have a proud history in research going back 100 years. Today, there are exciting opportunities for those wishing to pursue a higher research degree to doctoral or masters level. Within the broad disciplines listed above there are many research centres, clusters and institutes led by highly experienced and world-renowned researchers.

The College has an excellent track record in attracting significant Science Foundation Ireland (SFI), European and industrial funding to support its many research activities. Through research, the UCD College of Engineering and Architecture continues to promote excellence in Graduate training. The range of interdisciplinary taught Master's programmes now available within the college, and initiatives including the Structured and Thematic PhD programmes, mean that the Graduate School is ideally placed to offer innovative graduate level training programmes.

UCD School of Electrical, Electronic & Communications Engineering

Electrical and Electronic & Communications Engineering in UCD has a proud record of excellence and achievement in postgraduate education, PhD-level research and providing research publications to the highest international standards.

We believe research is a vitally important part of our mission, not just for its own sake but because international experience shows that the highest-quality graduate experience takes place in a research-intensive context. We are wholly committed to providing a first-rate graduate formation to our students. We are clear in placing strong emphasis on the scientific and mathematical fundamentals of the discipline, as the best long-term preparation for a student destined for a leadership role in a world of rapid technical change.

Much of our research is carried out in strong partnership with leading-edge industry and is also located within a strong web of collaborations with international academic and industry-based centres of excellence. While research outputs are of high academic quality, they also have had high impact in terms of innovation including an excellent track record of successful new company formation.

UCD School of Mechanical & Materials Engineering

The UCD School of Mechanical and Materials Engineering offers the widest range of both research-based and taught postgraduate programmes. Building on a long history, it has always moved with the changing needs of industry and the global marketplace and today offers specialist programmes in Energy Systems, Mechanical, Materials, Bioengineering and Engineering Management.

As well as taught programmes, there is a wide variety of research opportunities available. Research has always had a strong industry focus and the school boasts the first ever UCD spin-out company, The Timoney Technology Group, over 40 years ago.

What will I study?

This MSc is a 12 month programme comprising 90 credits. 45 credits (50%) are given to the research project supervised by a faculty member at UCD and 45 credits (50%) go toward the taught modules.

- Research Project (45 credits)
- Biosignal and Image Processing (5 credits)
- Rehabilitation Engineering (5 credits)
- Biomechanics (5 credits)
- Medical Sciences for Biomedical Engineers (5 credits)
- Biomaterials (5 credits)
- Cell & Tissue Engineering (5 credits)
- Neural Engineering (5 credits)
- Medical Device Design (5 credits)
- Image Processing in Matlab (5 credits)

What are the career opportunities?

Some key Irish Medtech facts/ figures:

- There are currently 250 medical technology companies in Ireland, exporting €7.2b worth of product annually and employing 25,000 people - the highest number of people working in the industry in any country in Europe, per head of population.
- Exports of medical devices and diagnostics products now represent 8% of Ireland's total merchandise exports; and growth prospects for the industry globally remain good.
- Many of the world's top medical technology companies have invested significantly in Ireland and a number of exciting, research-based, indigenous companies are emerging and competing internationally.
- 50% of the companies in the sector are indigenous (ref Enterprise Ireland)
- The Irish government has identified the medical technology sector as one of the key drivers of industrial growth for the future and provides a wide range of supports to encourage and foster this growth.

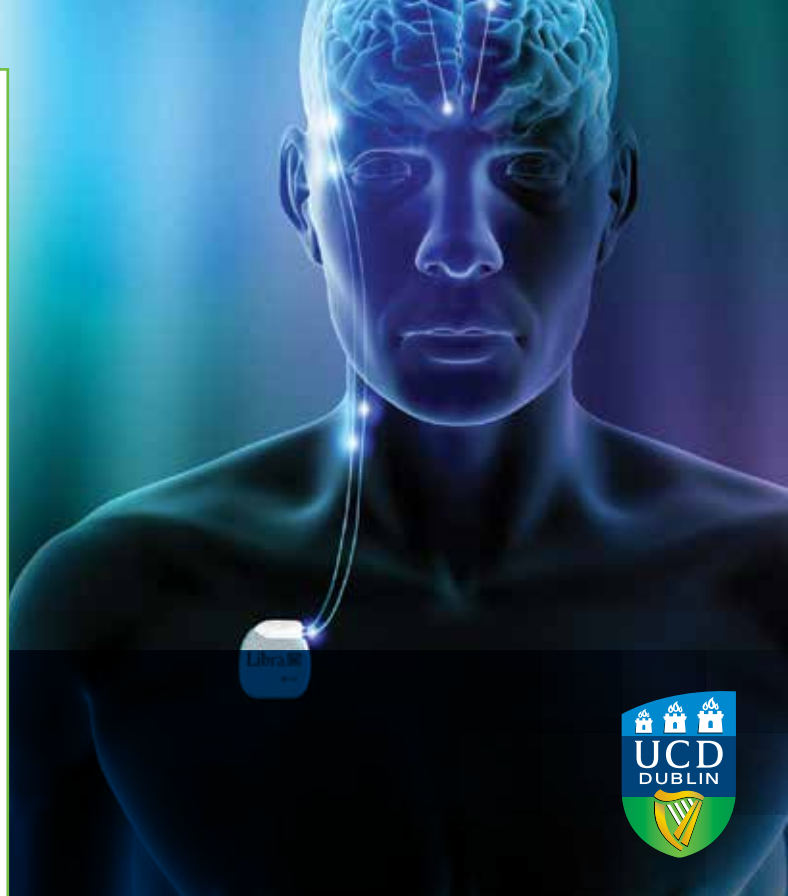
The medical technology industry in Ireland is changing from being prominently manufacturing to being more complex and driven by R&D. There are excellent employment opportunities in this sector.



Academic Profile

Dr Eoin O'Cearbhaill Programme Coordinator

Dr Eoin O'Cearbhaill is a lecturer in the School of Mechanical and Materials Engineering, University College Dublin. His research is focused on the development of medical devices, offering smart ways of delivering next-generation therapeutics and improving patient care. Of note, Dr O'Cearbhaill developed a mechanical clutch needle designed to stop automatically when it enters a cavity (awarded 1st prize at The MIT Sloan Bioinnovations Conference, 2012). Dr O'Cearbhaill and colleagues developed a bio-inspired microneedle adhesive patch that mechanically interlocks with tissue and can be used to anchor skin grafts, for sustained drug delivery or the extraction of interstitial fluid (awarded IChemE's Innovative Product of the Year Award 2013).



Entry Qualifications

Applicants must have:

- A first cycle honours (2:1) Bachelor Degree in Biomedical, Electronic or Mechanical Engineering. Applications from graduates with a Science/Life Science or Medical background will also be considered on a case by case basis.
- A complete application which includes a detailed explanation of your interest in the programme
- Names and contact details of two referees who can assess your intellectual ability, maturity and motivation
- Applicants may be required to attend an interview as part of the application process.

Note: International students who have sat the GRE, are invited to submit their result as part of the application process.

If English is not your native language, the minimum acceptable score on the TOEFL Internet Based Test is 90 and on IELTS it is 6.5.

Duration

This MSc is a one year, full-time, 12 month programme, comprising 90 credits.

Contact us

General admission queries: Rebecca Patterson / Karina O'Neill
eamarketing@ucd.ie
Tel: +353 1 716 1916/1781
www.ucd.ie/eacollege

Applying Online

To apply online, please go to www.ucd.ie/apply, create a user account, and then select 'MSc Bioengineering (T167)'.

Useful Links

www.ucd.ie/programmes/t167
www.ucd.ie/graduatestudies/coursefinder/