UNIVERSITY COLLEGE DUBLIN

COLLEGE OF ENGINEERING AND ARCHITECTURE

UCD SCHOOL OF ELECTRICAL, ELECTRONIC AND COMMUNICATIONS ENGINEERING
and the
UCD SCHOOL OF MECHANICAL AND MATERIALS ENGINEERING

MASTER OF ENGINEERING (Biomedical) DEGREE PROGRAMME
MTEMP006, T160

Duration: 2 Years

Schedule: Full-Time

Commencing: Monday, 10 September, 2012

Programme Coordinator & Contact Details:

Professor David FitzPatrick/Dr Madeline Lowery
School of Electrical, Electronic and Communications Engineering/School of Mechanical and Materials Engineering
UCD Engineering and Materials Science Centre,
University College Dublin, Belfield,
Dublin 4
Ireland

Application Details: Applications for this programme are through Online Applications www.ucd.ie/apply

Entry Requirements: Candidates holding a Bachelors Degree in Engineering (with a minimum of 2H2 honours level) or an equivalent engineering qualification will be considered.

Closing Date: 15 March 2012 (Round 1 Offers), and 15 July 2012 (Round 2 Offers)

Candidates from outside the European Union are encouraged to apply by 15 March 2012, in order to leave sufficient time for processing of visa applications. More information on the latter point is available at:
http://www.citizensinformation.ie/en/travel_and_recreation/travel_to_ireland/student_visas.html

Tuition Fees : €6,120.00 (EU students) per annum, €11,400.00 (Non-EU) per annum (2011-12 figures).
For up-to-date information, see http://www.ucd.ie/registry/adminservices/fees/index.html

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OVERVIEW

Biomedical Engineering is the application of the principles of engineering to healthcare and medicine. It is an interdisciplinary field, requiring knowledge of both medicine and engineering. The Master of Engineering (ME) in Biomedical Engineering programme aims to provide graduates with a broad background in biomedical engineering, taking the fundamentals of Electrical, Electronic and Mechanical Engineering developed at undergraduate level and complementing these with modern biomedical engineering applications and approaches. As part of the ME students will study

Biomedical Engineering subjects such as Rehabilitation Engineering, Neural Engineering, Biomechanics and Medical Device Design. They will also have the opportunity to choose from a range of modules in physiology and anatomy alongside advanced engineering topics including Advanced Signal Processing and Dynamics.

There is an emphasis on independent learning and research, with the opportunity to participate in a work placement in the medical technologies industry or with a research laboratory in UCD or abroad. Students will work with staff and researchers who have extensive experience in Biomedical Engineering research. The programme also aims to develop a knowledge of how the medical device industry is regulated and how new products are introduced to the market.

The ME (Biomedical Engineering) programme is designed for students seeking to obtain a professionally recognised qualification in Biomedical Engineering and is structured to provide an engineering qualification fully compliant with the latest Masters level accreditation requirements of Engineers Ireland (http://www.iei.ie/services/programme-accreditaton/).

COURSE CONTENT

The ME (Biomedical Engineering) programme involves lectures, tutorials, assignments, laboratory work and work placement. A significant research project carried out during year 2 is also a critical component of the programme. A wide range of core and option modules are included in the programme. The table below shows the modules offered within the 2011/2012 academic year and is provided for information only. Where modules become unavailable, comparable subject matter will be covered in substitute modules.

MODULES:

Module Code	Module Title	Core/ Option	Core Credits	Option Credits	Semester
YEAR ONE					
MEEN40480	Basic Medical Sciences	(C)	5		1
MEEN40600	Medical Device Design	(C)	5		1
MEEN30140	Professional Engineering (Finance) (or, if already taken, additional Option Module from below)	(C)	5		1
EEEN40010	Control Theory	(O)		5	1
EEEN40050	Wireless Systems	(O)		5	1
EEEN30030	Electromagnetic Waves	(O)		5	1
EEEN40150	Radio Frequency Electronics	(O)		5	1
MEEN30030	Mechanical Engineering Design II	(O)		5	1
MEEN40060	Fracture Mechanics	(O)		5	1
MEEN20010	Mechanics of Fluids I	(O)		5	1
MEEN40020	Mechanics of Fluids II	(O)		5	1
MEEN30100	Engineering Thermodynamics II	(O)		5	1
PHYS20040	An introduction to Physiology: Human cells and tissues	(O)		5	1
PHYC40430	Nanomechanics - from single molecules	(O)		5	

	to single cells				1
STAT30240	Linear Models I (Statistics)	(O)		5	1
MEEN40540	Professional Work Experience or Equivalent	(C)	30		2
EEEN40070	Neural Engineering	(O)		5	2
MEEN40630	Biomaterials	(O)		5	2
MEEN40500	Cell and Tissue Engineering	(O)		5	2
MEEN30020	Mechanics of Solids II	(O)		5	2
MEEN40040	Materials Science and Engineering III	(O)		5	2
MEEN40180	Nanomaterials	(O)		5	2
MEEN30010	Applied Dynamics II	(O)		5	2
MEEN40070	Advanced Metals/Materials Processing	(O)		5	2
MEEN40430	Professional Engineering (Management)	(O)		5	2
EEEN30050	Signal Processing Theory and Applications	(O)		5	2
EEEN40130	Advanced Signal Processing	(O)		5	2
EEEN40060	Digital Communications	(O)		5	2
EEEN30060	Communication Theory	(O)		5	2
EEEN30120	Analogue Electronics	(O)		5	2
PHYS20020	Neurophysiology: Physiology of Sensing and Responding to the Internal and External Environment	(O)		5	2
PHYS20030	Physiology of the Internal Environment of the Human Body	(O)		5	2
YEAR TWO					
MEEN40610	Research Project/Thesis – Part 1	(C)	5		1
MEEN40560	Research Skills and Techniques	(C)	5		1
EEEN40350	Rehabilitation Engineering	(C)	5		1
EEEN40010	Control Theory	(O)		5	1
EEEN40050	Wireless Systems	(O)		5	1
EEEN30030	Electromagnetic Waves	(O)		5	1
EEEN40150	Radio Frequency Electronics	(O)		5	1
MEEN30030	Mechanical Engineering Design II	(O)		5	1
MEEN40060	Fracture Mechanics	(O)		5	1
MEEN20010	Mechanics of Fluids I	(O)		5	1
MEEN40020	Mechanics of Fluids II	(O)		5	1
MEEN30100	Engineering Thermodynamics II	(O)		5	1
PHYS30010	Physiology of the Cardiovascular System	(O)		5	1
NEUR30080	Neuromuscular and Membrane Biology	(O)		5	1
PHYC40430	Nanomechanics – from single molecules to single cells	(O)		5	1
STAT30240	Linear Models 1 (Statistics)	(O)		5	1
MEEN40610	Research Project/Thesis – Part 2	(C)		15	2

EEEN40070	Neural Engineering	(O)		5	2
MEEN40500	Cell and Tissue Engineering	(O)		5	2
MEEN40630	Biomaterials	(O)		5	2
MEEN30020	Mechanics of Solids II	(O)		5	2
MEEN40040	Materials Science and Engineering III	(O)		5	2
MEEN40180	Nanomaterials	(O)		5	2
MEEN30010	Applied Dynamics II	(O)		5	2
MEEN40070	Advanced Metals/Materials Processing	(O)		5	2
MEEN40430	Professional Engineering (Management)	(O)		5	2
EEEN30050	Signal Processing Theory and Applications	(O)		5	2
EEEN40130	Advanced Signal Processing	(O)		5	2
EEEN40060	Digital Communications	(O)		5	2
EEEN30060	Communication Theory	(O)		5	2
EEEN30120	Analogue Electronics	(O)		5	2
PHYS20020	Neurophysiology: Physiology of Sensing and Responding to the Internal and External Environment	(O)		5	2
PHYS20030	Physiology of the Internal Environment of the Human Body	(O)		5	2

Please note that the Modules listed above are from the 2011/2012 academic term and are indicative only and that final selection of modules is subject to consultation with and prior approval by the Programme Co-ordinator.

Timetable / Hours

This is a two year programme. The programme is modular and semesterised with full-time hours. There are two teaching semesters in each year, i.e. Semester 1 (Autumn) and Semester 2 (Spring). The work placement may be conducted either as a 30-credit module, taking place over 6-8 months during Semester 2 and the summer period of year 1, or as a 10-credit module during the summer break between years 1 and 2.

Details of the official University calendar for 2012/2013 are as follows:

Semester 1
Teaching term 1 Monday, 10 September 2012 – Friday, 30 November 20121 (12 weeks)
Revision Saturday, 1 December 2012 – Friday, 7 December 2012 (1 week)
Exams Monday, 10 December 2012 – Friday, 21 December 2012 (11 working days)

Semester 2
Teaching term 2a: Monday, 21 January 2013 – Friday, 8 March 2013 (7 weeks)
Fieldwork/Study period Monday, 11 March 2013 – Sunday, 24 March2 2013 (2 weeks)
Teaching term 2b Monday, 25 March 2013 – Friday, 26 April3 2013 (5 weeks)
Revision Monday, 29 April 2013 – Sunday, 5 May 2013 (1 week)
Exams Tuesday, 7 May4 2013 – Saturday, 18 May 2013 (11 working days)

Summer term/Research period
Term Monday, 20 May – Sunday, 8 September6 16 weeks
Graduate exam process5 (final dates to be confirmed)

1 October Bank Holiday: Monday, 29 October 2012
2 St Patrick's Day, Sunday, 17 March 2013
3 Good Friday, 29 March 2013; Easter Sunday, 31 March 2013; Easter Monday, 1 April 2013
4 May Bank Holiday: Monday, 6 May 2013
5 June Bank Holiday: Monday, 3 June, 2013; August Bank Holiday: 5 August 2013

AWARD

Graduates are eligible for the award of Masters of Engineering (ME) in Biomedical Engineering from University College Dublin.

CAREER OPPORTUNITIES

Graduates of the Biomedical Engineering Masters degree at UCD will will be equipped with the skill set and knowledge, vital for crucial roles in research, design and development in the medical devices and technologies industry or to pursue PhD research in biomedical engineering.

FURTHER INFORMATION

For further information in relation to this programme, please contact the UCD Engineering and Architecture Programme Office Tel: (+353) 1 716 1868 or Email: eng.arch@ucd.ie