

INTRA Programme

M.Eng./B.Eng. Biomedical Engineering



The Objective of this five-year, full-time degree (with optional B.Eng. exit route after four years) is to produce graduates who will:

- Be able to relate the appropriate principles of engineering, biological and physical sciences and have an understanding of their applicability to the healthcare and related industries
- Be capable of applying engineering solutions to medical-related problems
- Be able to perform effectively in a research & development environment associated with the medical device sector
- Be capable of effective project management and co-ordination of design, simulation, testing, prototyping and validation programmes for healthcare products and systems
- Be fully familiar with and have experience in the technological processes and product innovation activities of the medical device sector
- Be capable of forming a partnership with the medical profession
- Have the ability to communicate engineering concepts and ideas by oral, written and graphical means and to assimilate, interpret and evaluate information from a wide range of sources
- Be able to use initiative and imaginative skills to devise innovative products and solve related problems within practical constraints
- Have an awareness of the position of professional engineers in society and of the social and environmental implications of technological decisions

Programme Outline:

This degree programme is concerned with the research, design, manufacture, and analysis of medical implants, aids, devices, equipment and systems. Having gained a thorough fundamental knowledge of Mechanical Engineering, Electronics and Computer Science in first year, the programme develops in second and third year with core subjects in mechanical, manufacturing, biology and bioengineering. In third year students learn to develop products in accordance with relevant regulatory requirements and take part in a significant Product Design group project with students from other engineering disciplines. In fourth and fifth year, students learn to use advanced CAE design tools and how to apply these and a wide range of technologies to the design of medical devices and systems.

Relevant Work Experience through DCU's work experience programme *INTRA* (INtegrated TRAIning) is a central feature of education at DCU and an integral part of most undergraduate and some postgraduate degree programmes. **Students from the M.Eng./B.Eng. in Biomedical Engineering are required to complete a six month INTRA placement, at the end of third year, from April to September inclusive.**

Work Areas

Students from the B.Eng. Biomedical Engineering will have the ability to work in the following roles within the Medical/Healthcare Sector:

- Product/Process Design Engineer
- Test Engineer
- Project Engineer
- Research & Development Engineer
- Manufacturing Engineer

Student Availability

Students are available for interview from October onwards. Please post vacancies on the *INTRA on line* web site at www.intra.dcu.ie, or send details to:

INTRA Unit, Student Support & Development,
Dublin City University,
Glasnevin, Dublin 9, Ireland.
Phone: 00 353 1 700 5033
Fax: 00353 1 700 5505
Web: www.intra.dcu.ie

M.Eng./B.Eng. BIOMEDICAL ENGINEERING

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8	Semester 9	Semester 10
EM103 Engineering Mathematics and Computation [10 Credits]	EM203 Mathematics II (Engineering) [10 Credits]	MM310 Product Design [10 Credits]	MM310 Product Design [10 Credits]	MM310 Product Design [10 Credits]	MM310 Product Design [10 Credits]	MM310 Product Design [10 Credits]	MM310 Product Design [10 Credits]	MM542 MEng Project [30 Credits]	MM542 MEng Project [30 Credits]
EM106 Project Work and Technical Drawing [10 Credits]	EE203 Circuits [5 Credits]	MM220 Anatomy [5 Credits]	BE201 Biomolecules and Metabolism [5 Credits]	MM353 Fundamentals of Control [5 Credits]	MM413 Advanced Bio Materials & Processing Tech. [5 Credits]	MM459 Robotics [5 Credits]	MM503 Surgical Device Technology [7.5 Credits]	BD15XX Advances in Diagnostic Technology [7.5 Credits]	BD15XX Advances in Diagnostic Technology [7.5 Credits]
EM113 Introduction to Electronics [5 Credits]	EM105 Fundamentals of Professional Development [5 Credits]	MM211 Strength of Materials I [5 Credits]	MM228 Biomechanics of Human Movement [5 Credits]	MM382 Probability and Engineering Statistics [5 Credits]	MM371 Product Development & Regulatory Compliance [5 Credits]	MM421 Finite Element Analysis [7.5 Credits]	MM485 Operations Research [7.5 Credits]	EE416 Biomedical Image Acquisition and Management [7.5 Credits]	MM524 Advanced Finite Element Analysis [7.5 Credits]
FSH104 Basic Sciences for Engineering [10 Credits]	EM111 Materials and Energy [5 Credits]	BE101A Introduction to Cell Biology and Biochemistry [5 Credits]	MM226 Design and CAD/CAM [5 Credits]	BE309 Immunology & Cell Biology for Engineers [5 Credits]	MM345 INTRA Placement [15 Credits]	MM432 Heat Transfer and Fluid Mechanics [7.5 Credits]	MM498 Rehabilitation Engineering. [5 Credits]	MM533 Research Practice & Methodology [7.5 Credits]	MM532 Computational Thermo-fluid Dynamics [7.5 Credits]
EM107 I.T. Skills and Software Tools for Engineers [5 Credits]	EM112 Statics and Dynamics [5 Credits]	MM203 Mechanics of Machines I [5 Credits]	MM227 Thermofluid Mechanics [5 Credits]	MM307 Measurement & Signal Processing [5 Credits]	EE453 Computer Vision [7.5 Credits]		MM502 Biomaterials, Artificial Organs and Tissue Engineering [7.5 Credits]	MM500 Design for Clinical Practice [7.5 Credits]	
	EM108 Software Development for Engineers [5 Credits]	MM225 Design & CAD [5 Credits]	MM212 Strength of Materials II [5 Credits]	MM306 Mechanics of Machines II [5 Credits]					