

## Overview

<b>Programme Code</b>	36313
<b>Programme Title</b>	Biomedical Engineering
<b>Awarding Institution</b>	Liverpool John Moores University
<b>Programme Type</b>	Level 3/4/5 Qualification
<b>Language of Programme</b>	All LJMU programmes are delivered and assessed in English
<b>Programme Leader</b>	
<b>Link Tutor(s)</b>	Karl Jones

<b>Partner Name</b>	<b>Partnership Type</b>
International College of Business and Technology	Validated

## Awards

<b>Award Type</b>	<b>Award Description</b>	<b>Award Learning Outcomes</b>
Target Award	Higher Diploma - HD	See Learning Outcomes Below
Alternative Exit	Certificate of Higher Education - CHE	Demonstrate knowledge of the underlying concepts and principles associated with Biomedical Engineering, and an ability to evaluate and interpret these within the context of that area of study. Demonstrate an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of Biomedical Engineering.

<b>Alternate Award Names</b>	
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## External Benchmarks

<b>Subject Benchmark Statement</b>	UG-Biomedical science (2019), UG-Engineering (2019)
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## Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Full-Time, Face to Face	March	ICBT, Colombo	18 Months
Full-Time, Face to Face	September	ICBT, Colombo	18 Months

## Aims and Outcomes

### Educational Aims of the Programme

Our unique Biomedical Engineering programme aims to provide the learner with theoretical and practical understanding of Biomedical Engineering up to higher diploma level. Upon successful completion of the programme, the candidate will be able to qualify to enter the final year of the Biomedical Engineering degree of Birmingham City University. The programme will also provide the learner with the skills and expertise needed to work in specialist areas such as assistive technology, rehabilitation, medical imaging and robotics, physiology monitoring, cardiopulmonary engineering, e-health, orthopaedic implants, regenerative medicine and tissue engineering. Biomedical Engineering is a discipline of engineering that interacts with the human body. The learner will be developing and applying innovative skills in the design, manufacturing and maintenance of medical equipment and devices covering all spectrums, from the new born to assistive living for the elderly. Industrial-led practical workshops and labs will help enhance technical skills. This will enable the learner to relate 'real-life' commercial innovations to the underpinning academic theory learnt in the lectures. Along with these technical skills, as an engineer the learner will also gain a diverse range of transferable skills, including effective communication, leadership, the ability to critically assess gaps in target healthcare markets, and the tools required to provide solutions to bridge those gaps.

### Learning Outcomes

Code	Description
PLO1	Understand the scientific principles of biomedical science and engineering which associates with biomedical engineering.
PLO2	Adapt to new technologies and their implementation in the hospital/clinical environment.
PLO3	Be able to conduct experiments using a variety of scientific equipment with minimum guidance.
PLO4	Be able to use software packages to solve biomedical engineering problems (Example – MATLAB, ORCAD, MULTISM etc.).
PLO5	Understand current practice and limitations in the field of biomedical engineering, and appreciate new developments likely to occur.
PLO6	Understand the contexts in which engineering knowledge can be applied (e.g. management, technology, development, etc.).
PLO7	Appreciate, adopt and apply the use of technical literature and other information sources.

<b>Code</b>	<b>Description</b>
PLO8	Gain awareness of the nature of regulatory and contractual issues governing health care / medical technologies.
PLO9	Understand the appropriate codes of practice and medical industry standards.
PLO10	Develop an awareness of quality control issues.
PLO11	Undertake evaluations of risks through some understanding of the basis of such risks pertaining to health care / medical technology.
PLO12	Understand the mathematical models relevant to biology, medicine and related engineering disciplines.
PLO13	Develop knowledge and understanding of management and business practices, their limitations, and how these may be applied appropriately to strategic and tactical issues.
PLO14	Understand the requirement for relevant engineering activities to promote sustainable technological development in the field of biomedical engineering.
PLO15	Work professionally within the framework of relevant legal requirements governing biomedical engineering activities, including health, safety, and risk (including environmental risk), issues in the clinical context for patient use, and management of medical equipment.
PLO16	Understand the need for professional and ethical conduct in the field of biomedical engineering.
PLO17	Understand and identify problems in the medical field and apply effective solutions to those problems using biomedical engineering applications.
PLO18	Develop an awareness of emerging Information and Communications Technologies (ICT) and apply.
PLO19	Apply a systems approach to biomedical engineering problems.
PLO20	Use essential knowledge to investigate new and emerging health care or medical technologies.
PLO21	Understand the capabilities of computer based models for solving problems in biomedical engineering, and assess the limitations of specific scenarios.
PLO22	Lead and manage the technical design team, the development process and evaluate the essential outcomes.
PLO23	Widen knowledge and comprehensive understanding of health care / medical technology design processes and methodologies and apply and adapt them in unfamiliar situations.

## Programme Structure

### Programme Structure Description

Structure - 240 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4500ICBTBE Cell Biology and Human Physiology Approved 2022.01 - 15 credit points	
[MODULE] 4500ICBTBE Engineering Mathematics Approved 2022.01 - 15 credit points	
[MODULE] 4501ICBTBE Introduction to Biomedical Engineering Approved 2022.01 - 15 credit points	
[MODULE] 4502ICBTBE Biomolecular Structure and Analysis Approved 2022.01 - 15 credit points	
[MODULE] 4502ICBTBE Digital Electronics Approved 2022.01 - 15 credit points	
[MODULE] 4503ICBTBE Biophysics and Instrumentation Approved 2022.01 - 15 credit points	
[MODULE] 4503ICBTBE Analogue Electronics Approved 2022.01 - 15 credit points	
[MODULE] 4504ICBTBE Programming Concepts Approved 2022.01 - 15 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5500ICBTBE Analytical Mathematics Approved 2022.01 - 15 credit points	
[MODULE] 5500ICBTBE Design Project Approved 2022.01 - 15 credit points	
[MODULE] 5501ICBTBE Medical Instrumentation Approved 2022.01 - 15 credit points	
[MODULE] 5502ICBTBE General and Medical Microbiology Approved 2022.01 - 15 credit points	
[MODULE] 5503ICBTBE Biomedical Signal Processing Approved 2022.01 - 15 credit points	
[MODULE] 5504ICBTBE Clinical Immunology Approved 2022.01 - 15 credit points	
[MODULE] 5505ICBTBE Healthcare Industry Approved 2022.01 - 15 credit points	
[MODULE] 5505ICBTBE Principles and Applications of Microcontrollers Approved 2022.01 - 15 credit points	

Module specifications may be accessed at <https://proformas.ljmu.ac.uk/Default.aspx>

## Teaching, Learning and Assessment

Lectures, tutorials, problem solving sessions, seminars, workshops, computer sessions, participation in projects. Examinations, assignments, preparation of reports, essays, technological reports, oral presentations, workshops, peer review, computer-based exercises.

## Opportunities for work related learning

Work-related learning is included within this programme, so students will have the opportunity to engage in real world projects and activities. The programme has active links with industry and involves employers in the industrial projects at each level of the programme. Real world case studies are used wherever possible.

## Entry Requirements

Type	Description
Other international requirements	English Language requirements: Students are required to have a minimum English language level of Sri Lankan General Certificate of Education (Ordinary Level) English Grade C or above, or a pass in the ICBT Academic English Studies course or recognised equivalent, such as the below: • GCSE/O-Level in English from a UK awarding body grade C • IGCSE English as a First Language grade C • IGCSE English as a Second Language grade C • Internet based TOEFL with an overall score of 72 (UG), 79 (PG) including 17 in Listening, 20 in Writing, 18 in Reading and 18 in Speaking • Pearson Test of English (PTE) • International Baccalaureate (Standard Level Grade 5/Higher Level grade 4 in English) • Cambridge Advanced English Grade C (minimum of “weak” in all four components (listening, reading, speaking and writing). Mature entry: In exceptional circumstances, candidates with non-standard qualifications, may qualify for entry to the course on the basis of considerable work experience in the automotive engineering industry.
Alternative qualifications considered	Completion of 13 years of formal education in Sri Lanka (or equivalent) and have studied A levels in subjects that include Maths, a Science or Technology. Ordinary level qualifications plus the successful completion of a NARIC approved Foundation programme in a biomedical engineering subject. A programme of study that is equivalent to a UK level 3 qualification.

## Extra Entry Requirements