UNIVERSITY OF LIVERPOOL

MSc (Eng)

Biomedical Engineering

Study mode	Duration	
Full-time	12 months	Apply by: **29 August 2025** Starts on: **22 September 2025**

About this course

Discover the principles and technologies that have led to biomedical engineering becoming essential in healthcare, medicine and human biology. Suitable for graduates in engineering or physical sciences, this master's degree combines knowledge of biomechanics and fluid mechanics in the human body with engineering design innovations.

Introduction

Biomedical engineering, the application of engineering knowledge and skills to healthcare, medicine and human biology, is the fastest growing engineering discipline worldwide.

Contributing to the future development of artificial organs, medical devices and novel treatments, the School of Engineering is home to internationally recognised, ground-breaking research in biomedical engineering. This programme harnesses this expertise in key areas around biomechanics, cardiovascular fluid mechanics, tissue engineering, biomaterials, engineering design and manufacturing.

You'll discover how to measure and analyse human movement, learn the principles of blood flow and the role of different bio-fluids in the human body, and gain an understanding of the structures and properties of materials used in medical devices.

Immersing you in computer aided design and engineering product design, we'll introduce the latest 3D tools and techniques and task you with the development of innovative products and creative solutions.

Accredited by the Institution of Mechanical Engineers, the programme includes a supervised independent research project. This provides the opportunity to enhance your skills and knowledge in an area of biomedical engineering of your choice, supported by our specialist research facilities.

Who is this course for?

This programme is designed for engineers and physical scientists who want to develop specialist skills and knowledge in biomedical engineering.

What you'll learn

- Cardiovascular fluid mechanics in the human body, including the importance of blood flow
- Biomechanics of the musculoskeletal system, including how to measure and analyse human movement
- The structures and properties of materials used in medical devices
- Applications of tissue engineering to the development of the next generation of smart-implantable medical devices
- Key principles of engineering product design
- The statistical principles of radiation detectors
- Computer aided design methodologies, tools and techniques
- Physics and biological principles which underpin medical physics and clinical engineering
- Material manufacturing and processing technologies
- Transferable skills in problem solving, critical analysis, teamwork and communication.

Accreditation

This programme is accredited by the Institute of Mechanical Engineering (IMechE), the professional body for mechanical engineers in the UK. This means that successful

completion of the programme will put you on track to gain Chartered Engineer (CEng) status in the UK.

Accreditation in detail

Institution of Mechanical Engineers

All mechanical engineering programmes are accredited, or pending accreditation, by the Institution of Mechanical Engineers. This is the professional body for Mechanical Engineers. Our programmes are a recognised qualification on the route to Chartered Engineer status.

Back to top

Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

Semester one

Modules MECH401 Group Engineering Design and PHYS809 Statistics span semesters one and two.

UK students are exempt from module ENGG596 Technical Writing for Engineers in semester one. EU and international students with strong English language skills may also be exempt, subject to the approval of the programme director.

If you're exempt from ENGG596, you'll select a total of 30 credits of optional modules across semesters one and two. If you need to study ENGG596, 22.5 credits of optional modules will be chosen.

Modules

Compulsory modules	Credits
TECHNICAL WRITING FOR ENGINEERS (ENGG596)	7.5
STRUCTURAL BIOMATERIALS (MATS410)	15
COMPUTER AIDED DESIGN (MNFG604)	7.5
GROUP ENGINEERING DESIGN (MECH401)	15
STATISTICS (PHYS809)	7.5
CARDIOVASCULAR PHYSIOLOGY AND MECHANICS (ENGG415)	15

Optional modules	Credits
INTRODUCTION TO ETHICS IN HEALTHCARE (MDSC402)	7.5
INTRODUCTION TO RESEARCH ETHICS IN HEALTHCARE (MDSC403)	7.5
MATERIALS PROCESSING AND SELECTION (MATS520)	15
FINITE ELEMENT ANALYSIS (MECH452)	7.5

Programme details and modules listed are illustrative only and subject to change.

Semester two

Modules MECH401 Group Engineering Design and PHYS809 Statistics span semesters one and two.

UK students are exempt from module ENGG596 Technical Writing for Engineers in semester one. EU and international students with strong English language skills may also be exempt, subject to the approval of the programme director.

If you're exempt from ENGG596, you'll select a total of 30 credits of optional modules across semesters one and two. If you need to study ENGG596, 22.5 credits of optional modules will be chosen.

Modules

Compulsory modules	Credits
MUSCULOSKELETAL BIOMECHANICS (ENGG410)	15
TISSUE ENGINEERING (ENGG412)	15
STATISTICS (PHYS809)	7.5
GROUP ENGINEERING DESIGN (MECH401)	15

Compulsory modules	Credits
CARDIOVASCULAR PHYSIOLOGY AND MECHANICS (ENGG415)	15

Optional modules	Credits
INTRODUCTION TO RESEARCH ETHICS IN HEALTHCARE (MDSC403)	7.5
SMART MATERIALS (MATS515)	7.5
ADVANCED MANUFACTURING WITH LASERS (MECH607)	15
ADVANCED ENGINEERING MATERIALS (MATS631)	15

Programme details and modules listed are illustrative only and subject to change.

Final project

You will undertake your research project over the summer.

Modules

Compulsory modules	Credits
MSC(ENG) PROJECT (60 CREDITS) (ENGG660)	60

Programme details and modules listed are illustrative only and subject to change.

Teaching and assessment

How you'll learn

You'll be taught through a combination of traditional lectures and practical classes, benefitting from research-led teaching and active learning methods.

There will be a mixture of lectures, seminars, tutorials, laboratory work, demonstrations, problem-solving exercises, group projects and independent study.

How you're assessed

You'll be assessed through a combination of written exams, class tests and coursework.

Coursework-based assignments include essays, reports, oral presentations, mini-project work, key skills exercises and a dissertation.

Liverpool Hallmarks

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

Back to top

Careers and employability

Whether you're seeking a career designing medical devices or assistive technologies, focusing on research and development, or working in engineering management or consultancy, this MSc (Eng) will prepare you for a variety of opportunities in the UK and abroad.

The programme includes a strong practical element and incorporates the latest academic and industry research, preparing you to work effectively at the forefront of engineering.

Our professional accreditation with the Institution of Mechanical Engineers means you'll graduate with a recognised qualification on the route to Chartered Engineer status.

You'll graduate from this MSc (Eng) ready for a career in medical device design and manufacture, academic research, and engineering management or consultancy.

Previous biomedical engineering graduates have gone onto careers working for medical device companies, pharmaceutical companies, and the National Health Service and other healthcare providers.

Their career destinations include working for companies such as:

- 3D LifePrints
- Fusion Implants
- AstraZeneca
- National Health Service.

You'll also be well placed to pursue PhD study. Some of our previous graduates have secured fully-funded PhD studentships.

Career support from day one to graduation and beyond

Career planning

From education to employment

Networking events

Back to top

Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

Tuition fees

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Full-time place, per year - £13,300

International fees

Full-time place, per year - £29,900

Fees stated are for the 2025-26 academic year.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **Learn more about paying for your studies.**.

Additional costs

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This could include buying a laptop, books, or stationery.

Find out more about the additional study costs that may apply to this course.

Back to top

Entry requirements

The qualifications and exam results you'll need to apply for this course.

Postgraduate entry requirements

We accept a 2:2 honours degree from a UK university, or an equivalent academic qualification from a similar non-UK institution. This degree should be in Engineering or Physical Sciences and should provide appropriate knowledge of core engineering science topics.

International qualifications

Select your country or region to view specific entry requirements.

Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

IELTS

6.5 overall, with no component below 6.0

TOEFL iBT

88 overall, with minimum scores of listening 19, writing 19, reading 19 and speaking 20. TOEFL Home Edition not accepted.

Duolingo English Test

125 overall, with writing not less than 125, speaking and reading not less than 115, and listening not below 110

Pearson PTE Academic

61 overall, with no component below 59

LanguageCert Academic

70 overall, with no skill below 65

PSI Skills for English

B2 Pass with Merit in all bands

INDIA Standard XII

National Curriculum (CBSE/ISC) - 75% and above in English. Accepted State Boards - 80% and above in English.

WAEC

C6 or above

Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

Pre-sessional English in detail

If you don’t meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

Your most recent IELTS score	Pre-sessional English course length	On campus or online
6.0 overall, with no component below 6.0	6 weeks	On campus
6.0 overall, with no component below 5.5	10 weeks	On campus and online options available
6.0 overall, with no more than one component below 5.5, and no component below 5.0	12 weeks	On campus and online options available
5.5 overall, with no more than one component below 5.5, and no component below 5.0	20 weeks	On campus
5.0 overall, with no more than one component below 5.0, and no component below 4.5	30 weeks	On campus
4.5 overall, with no more than one component below 4.5, and no component below 4.0	40 weeks	On campus

If you've completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.5 overall, with no component below 6.0, for further details.

Back to top

Generated: 28 Mar 2025, 07:46