Bioengineering

School of Aeronautical, Automotive, Chemical and Materials Engineering
Welcome

Loughborough University has a long history as a leader in many fields of engineering. We have combined our excellence in Chemical Engineering, Materials, Mechanical, Electrical and Manufacturing Engineering with our international excellence in Sport, Exercise and Health Sciences to create a cross-disciplinary research team to lead the advancement of Biological Engineering.

Our course content is industry relevant and research driven, thanks to the active involvement of our academics. Taught by a team of international experts, this course represents the very latest knowledge in this rapidly developing discipline.

You will get the opportunity to acquire practical experience with access to state-of-the-art equipment. Since 2009 our Centre for Biological Engineering has successfully developed the interface between engineering, biology and medicine attracting over £20 million of external investment. Our National Centre for Sport and Exercise Medicine delivers world-class education, research and clinical services to benefit the health and wellbeing of the nation – from everyday people at risk of ill health through to elite athletes.

You may also choose to undertake a year working in industry, which will provide you with the opportunity to gain vital paid work experience in a professional environment boosting your graduate employability prospects.

Studying at Loughborough is an enriching and valuable experience that opens routes to many career possibilities. We aim to realise the potential of all our students, and to help you find your place in the busy, exciting and fulfilling world of engineering.

Professor Chris Rielly
Dean of the School of Aeronautical, Automotive, Chemical and Materials Engineering
Bioengineering is a cutting edge, multidisciplinary field that applies engineering and technology principles to biological and medical problems. It aims to improve human health through combining engineering expertise with medical needs for the enhancement of healthcare.

Major advances in bioengineering include the development of artificial joints, magnetic resonance imaging (MRI), the heart pacemaker, angioplasty, bioengineered skin, kidney dialysis and the heart-lung machine.

This rapidly developing field of engineering allows bioengineering professionals to work in a wide range of areas. For instance, they may design computer software to run complicated three-dimensional scans, develop new drug therapies, or build models to understand the signals transmitted by the brain or heart. Whichever area they specialise in, Bioengineers can make a real difference to the quality of people’s lives around the world.

This course combines areas of expertise within Bioengineering across Loughborough University to create a course specifically designed to supply bioengineering industries with graduates that have a thorough grounding in the bioengineering disciplines, and the ability to apply their knowledge and skills effectively to bioengineering problems. Taught by a team of international experts, this course represents the very latest knowledge in this rapidly developing discipline.

Women in Engineering
In 1919, four female engineering students were admitted onto an entirely male-dominated engineering programme at the then, Loughborough Technical College. 100 years on and Loughborough University continues to celebrate women in engineering – through our annual memorial lecture dedicated to Claudia Parsons, one of the original four students. The University is a strong advocate for women in Science, Technology, Engineering and Mathematics (STEM) – creating a professional network of female engineers, celebrating women in engineering and showcasing what can be achieved in the field to future engineers.

The Loughborough Women’s Engineering Society (WES) offers support, networking and volunteering opportunities for all students. Many of our engineering departments have achieved Athena SWAN awards, recognising our commitment to advancing women’s careers in engineering.

Read more at: lboro.ac.uk/engineering/engineering-centenary
Engineer your career

If you are looking for hands-on industry experience with some of the world’s top companies, our School is the place for you.

All students are given the option to undertake industrial training with a year in industry. During your placement year, you will work towards one of three Diplomas, Diploma in Industrial Studies (DIS) or Diploma in Professional Studies (DPS), both of which count as an additional qualification to your degree. Some students may opt to complete a Diploma in International Studies (DimS) for work completed outside the UK.

This year of practical work gives you a clearer understanding of the industry, helping with the later stages of your study and deciding your future career direction.

You will be supported by dedicated staff in securing a placement that best suits your skills and professional aspirations.

During the placement year, your employer will nominate an industry specialist who will supervise you. You will also be visited by your University tutor at your place of work and will be required to write reports on your progress and experience.

The value of a placement year:

• **Improved career prospects.** A placement gives you real-life experience that will help you stand out when applying for jobs. It can often lead to sponsorship during the final year of your course and a job offer upon graduation.

• **Salary.** Most placements are fully salaried, with average salaries from £15,000 to £20,000.

• **Additional qualification.** An additional diploma is awarded upon successful completion of a placement year.

• **Professional skill development.** A placement year helps you develop your skills in time management, team working, presentation skills and project management that will be essential for your future career.

• **Put your knowledge to the test.** It is your chance to put your knowledge gained during your degree into practice within a professional environment and get a feel for your future role.

A selection of the companies providing recent placements include:

• General Electric
• GlaxoSmithKline
• Fujifilm Diosynth Technologies
• Malvern Instruments Ltd
• Johnson & Johnson
• Quotient Medical Technologies
• PepsiCo
• Pfizer
• Procter & Gamble
• Rainshaw
• Uniliver
• Virgin Media

15% MORE ENGINEERING STUDENTS ON PLACEMENTS THAN ANY OTHER UK UNIVERSITY HESA UG STUDENT RECORD 2016/2017: ENGINEERING & TECHNOLOGY
Inspiring graduates

Your time at Loughborough will form a launchpad from which you can build an exciting career. With so many opportunities available, you’ll never be short of ways to improve your employability prospects.

Engineers have some of the top earning starting salaries due to the unique and specialist skill set. Chartered Engineers and Commercial Managers command even higher salaries and once you have reached this status you can expect to earn a salary of over £50,000 per year.

Our degree programmes provide you with a diverse skill set that include project management, communication, teamwork, leadership, critical thinking and analysis. These skills, combined with your specific, technical expertise, will set you up for a successful career.

The University holds its own engineering-specific careers fair. In recent years, this has had over 70 companies attending specifically to recruit our students. This includes major consulting and contracting companies as well as more local and specialist firms.

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Bioengineering fields are rapidly developing and graduates work in a wide variety of sectors globally. Developing products and creating technology to help people achieve a better quality of life, they help to break barriers in medical and sporting achievements.

Our graduates develop excellent skills and knowledge which can be applied to a range of bioengineering careers. Additionally, these skills are highly transferable and can be applied to a range of graduate roles across a diverse number of industries. Across Loughborough engineering we have graduates employed by Pfizer, 3M, Fujifilm Diosynth Technologies and elsewhere within the bioengineering and biotechnology sectors.

Careers Network

Our award-winning Careers Network team is here to help and support you, offering everything from CV workshops, one-to-one advice sessions and mock interview practice sessions to high-profile employer events. We’ve got everything you need for a successful future.

Find out more: lboro.ac.uk/services/careers
Our world class laboratories allow you the opportunity to gain practical, hands-on experience with industry relevant equipment, offering you an enhanced learning experience.

**STEMLab**

STEMLab is a £17 million investment in new state-of-the-art laboratory facilities. It includes a suite of laboratories for practical work in Bioengineering, allowing you crucial opportunities to gain applied experience with biological samples in a safe and modern environment.

STEMLab also allows us to offer new ways to learn and collaborate, for example a ‘drop-in’ engineering workshop, alongside teaching laboratories, workshops, computer-aided design facilities, a design studio and informal learning spaces. Many of our lab and practical classes are taught in these facilities.

Take an interactive tour of STEMLab [here](http://www.lboro.ac.uk/stemlab)

The department is well-equipped, with extensive laboratories containing state-of-the-art equipment in materials processing, testing, analysis, simulations and characterisation.

Additionally, we have invested £25 million into the facilities in S-Building, home to our Bioengineering course. This means that you will benefit from new laboratory spaces and equipment – including a new 87-seater laboratory – for taught sessions, but also available for project work and private study.

Our courses have a very practical focus and include considerable hands-on experience within our world-class facilities. We have invested significantly in the quality of our equipment and laboratory spaces to offer you an enhanced learning experience, extensive practical teaching, and the opportunity to gain essential skills for your future career in industry.

"With the opening of the £17 million STEM Lab as well as recent refurbishment of existing buildings, it would be silly to describe the facilities as anything other than excellent.”

Alex
Biomaterials
Our Bioengineering degree is an interdisciplinary course from Loughborough’s Engineering Schools in the application of engineering to biology and medicine.

Bioengineers apply engineering techniques and innovative technology to solve real world complex biological and medical problems. It is a cutting-edge, multidisciplinary subject that aims to improve human health, bridging the gap between health, medicine and engineering for the enhancement of healthcare.

About the course
Our Bioengineering degree has been specifically designed to supply the bioengineering industries with graduates that have a thorough grounding in engineering systems and applications in bioengineering disciplines, a sound understanding of human anatomy, physiology and biological functions and the ability to apply their knowledge and skills effectively to bioengineering problems.

The field is rapidly developing, and bioengineers work in a wide variety of sectors globally, developing products and creating technology to help people achieve a better quality of life and break barriers in medical and sporting achievements. Examples include prosthetics and biomaterial implants, software engineering for advanced and 3D medical imaging, image-guided and robot assisted surgery, regenerative medicine against incurable diseases, tissue engineering such as bioengineered skin for wounds, 3D bioprinting, medical device development and new assistive technologies such as wearable technology, mobile and e-health.

Year 1
This year is made up of compulsory modules, providing you with an introduction to Bioengineering and a solid grounding for the rest of your studies. Modules include CAD and Engineering Drawing, Product Design, Mathematics and Thermodynamics.

Year 2
This year allows more focus for you to develop your understanding of materials and bioengineering. You’ll focus on Biochemistry and Cell Biology, Control Engineering, Materials Characterisation, Engineering Systems and Engineering Computation.

Optional placement year/study abroad
Year 3 MEng/final year BEng
This year sees the introduction of optional modules, allowing you to specialise in your preferred areas of bioengineering. Modules typically cover Additive Manufacturing, Body Composition, Biomedical Component Design and Sports Engineering. Compulsory modules include Product Innovation Management, Bioelectricity and Biophotonics Engineering and Healthcare Engineering, whilst this year you will also work on your individual project.

Optional placement year/study abroad
Final year MEng
You’ll be working on a group design project in this academic year, allowing you to develop project management skills, but you’ll also focus on optional modules meaning that you can explore topics of your choice. Some of these include Advances in Biomaterials, Drug Delivery and Targeting, and Regenerative Medicine.
Bioengineering with a Foundation Year

"Bioengineering allows you to study some new and exciting ideas and provides a great environment for expressing your own. The breadth of the course really allows you to explore different areas and may lead to you finding a new passion or a career path that you hadn’t considered before. The support from the course staff will ensure you are able to do your absolute best in all aspects of your life."

If you don’t have the usual scientific or mathematic background for an engineering degree, then a foundation degree is an excellent option to provide a solid grounding of knowledge of engineering, scientific and mathematical principles.

Our Foundation Studies course is primarily for those who wish to embark on an exciting career in bioengineering but are missing prerequisite subjects required or whose existing qualifications are not usually considered directly relevant for entry onto the core degree.

Our International Foundation course is designed for high-calibre international students who have successfully completed 12 years of education but need an extra year of study to apply for a UK undergraduate degree.

Loughborough also offers an Elite Athletes pathway for students who perform at a very high standard in their chosen sport and wish to study at Loughborough, but do not have the required qualifications due to sporting commitments.

About the course

If this is your situation, then one of our Foundation Studies courses could be what you require to bridge the gap in your studies and provide the platform for successful progression into the world of materials engineering.

Completing your foundation year will enable you to progress onto the first year of a course within the department, provided the relevant progression criteria are met.

You will be taught by University staff, including specialist Foundation Studies teaching staff. You will be a full member of the Loughborough family, with the same access to the Students’ Union, clubs, societies, sports facilities and support.

Completing a foundation year can be a real attribute to your overall degree success. It not only opens doors to courses that may have previously looked closed, but also provides a sound base on which to establish a successful academic career. Many who have completed the foundation year also said how beneficial it was, supporting their transition into University life.

Module overview

The Foundation Studies programme provides a background of mathematical and physical sciences, along with other essential subjects in Bioengineering, designed to prepare you for successful progression onto the first year of your chosen degree programme.

UCAS code

UK/EU entry: H1FY
International entry: H1PF

Typical offers

A level: BBE from three A levels (or equivalent) in any subjects
GCSE: A minimum of 5 GCSEs grade A to C (7-4).
Minimum grade 6/B in Maths
Other qualifications: Will be considered on an individual basis
Bioengineering enquiries
Department of Materials
Loughborough University
Leicestershire LE11 3TU UK
T: +44 (0)1509 223172
E: bioengineering.ug@lboro.ac.uk
lboro.ac.uk/materials

This brochure was written several months in advance of the academic year to which it applies (2021). Every effort has been made to ensure that the information contained within is accurate at the time of publishing, but updates (for example to course content) are likely to occur due to the time between publication and the course start date. It is therefore important to visit our online prospectus at www.lboro.ac.uk/study before applying to check for any updates, as this will be the most up-to-date repository of information.