Contents

Be a part of something extraordinary 3
What is bioengineering? 4
Learning and teaching 6
Courses 8
Course structure 10
Careers 14
A world-class learning environment 16
A city like no other 18
Find out more 19

Be a part of something extraordinary

Be inspired to help shape the future of healthcare technology by world-leading researchers and outstanding teachers who will challenge and support you to achieve your full potential.
Bioengineering is an evolving, technology-driven subject at the interface of engineering, medicine and the life sciences. Working with industry, doctors, clinicians and researchers, bioengineers are yielding new discoveries to improve human health and wellbeing across the world.

Bioengineering in the real world

- Nicotine patches
- Artificial organs
- Computer simulation for surgery
- Kidney dialysis and transplantation
- Medical imaging, such as X-ray, CT, MRI and PET scanners
- Tissue engineering and regenerative medicine
- Wearable technology

Rapid expansion

Population explosion
In just 200 years the global population has grown sevenfold to 7.5 billion.

Increased life expectancy
Average global life expectancy is 71.4 years and rising. Between 2000 and 2015 it increased by five years; the fastest increase since the 1960s.

Rising costs
The NHS faces a funding gap of up to £30bn by 2020–2021. Developing countries are struggling too.

So there are many new healthcare challenges
And medics alone can’t solve them.

But more people means more ideas
Bringing about rapid technological advances.

Bioengineers, medics and researchers are working together
To develop faster, smarter, cheaper solutions.

Bioengineering’s impact
- Improving the performance and bringing down the cost of healthcare technology.
- Finding better materials which can be produced more quickly and will last longer in the body.
- Reducing the invasiveness of interventions.
- Diagnosing illness faster and more accurately.
- Through wearable technology, encouraging people to be more pro-actively engaged with their own health.
Learning and teaching

You’ll be taught by academic staff at the forefront of developments in tissue and bone engineering, 3D printing, biophotonics, regenerative medicine, biomaterials and more. In a rapidly evolving field, you’ll learn about the very latest techniques and technology.

How you’ll learn
You’ll experience a variety of class types and learning activities on our courses.

» Lectures
» Labs and practicals
» Tutorials
» Flipped learning
» Project work
» Group study
» Independent learning

How you’re assessed
Assessment and feedback, along with guidance and support in personal tutorials, will help you develop and progress.

» Formal exams
» Online tests
» Coursework
» Lab skills
» Peer assessment
» Presentations
» Individual and group projects

Our interdisciplinary approach
Bioengineering at Sheffield is one of the UK’s leading interdisciplinary engineering degrees. Teaching is informed by world-leading researchers whose expertise spans the mathematical, engineering and scientific spheres. By studying a breadth of disciplines and learning how to make connections between them, you’ll gain the most comprehensive understanding of this progressive new field.

In industry, engineers work in multi-skilled teams to solve complex problems. By adopting an interdisciplinary approach too, we equip you with the knowledge and skills employers demand and which you’ll need to excel in the workplace once you’ve graduated.

You’ll be taught by experts in:

Name: Dr Nicola Green
Role: Bioengineering Admissions Tutor and Lecturer
Department: Materials Science and Engineering

“Our students get the best possible education from people at the cutting edge of research.”
Learn to use high-level engineering expertise to analyse and solve some of the most complex problems in biology, medicine and healthcare today.

Bioengineering

**BEng**
- Three years
- H673

**MEng**
- Four years
- H675

Our core degree. From electronics and chemical engineering to materials science and control systems, you'll gain a comprehensive understanding of core engineering principles applied to the human body and biological systems to improve human health. You'll graduate with practical and theoretical knowledge, as well as the transferable skills which employers demand.

Bioengineering with a Year in Industry

**BEng**
- Four years
- H677H

Following the same programme of study as our core degree, you’ll also spend a year working in a graduate-level role in an engineering company. This industrial experience will contextualise your studies and can give you the competitive advantage in the job market.

**MEng**
- Five years
- H671

Bioengineering with a Foundation Year

**BEng**
- Four years
- H160

Want to study Bioengineering but don’t have the correct qualifications? You’ll progress straight onto the first year of the Bioengineering degree after completing this fast-paced one year course.

**MEng**
- Five years
- H160

Entry requirements

We welcome applications from students studying a range of UK, European and international qualifications. View our latest entry requirements: sheffield.ac.uk/bioengineering/entry-requirements

**BEng or MEng?**

The first two years on these excellent courses are the same. The MEng offers more in-depth learning, as well as the chance to undertake high-level research in the final year. It also offers faster progression towards becoming a Chartered Engineer (CEng). Whichever you choose, depending on your results you may be able to transfer after your second year.

"I love the mix of disciplines. We take inspiration and techniques from many different pathways, from things like mathematics and engineering to anatomy and materials. I’ve particularly enjoyed the anatomy labs; getting to examine real human tissues and organs really helped bring our lectures into perspective."

Name: Michael Woodward
Course: BEng Bioengineering with a Year in Industry

24 hours contact time each week
Course structure

Choice and flexibility

Our modular courses have been designed to put you in control of what you study.

Year one will equip you with the fundamental principles of bioengineering. You’ll get to experience the breadth of the discipline by studying a broad range of core modules.

At the end of the first year, you’ll select one of four streams to specialise in for the rest of the course: Biomanufacturing, Medical Devices and Systems, Biomaterials or Biomedical Engineering (see p.12-13).

Alongside core modules on each stream you’ll select electives, enabling you to tailor your studies to your particular areas of interest.

Year one
Understand the basics

Your first year is all about equipping you with core knowledge. You’ll learn about biology, physiology and anatomy and study the fundamentals of traditional engineering across a range of disciplines, from electronics to tissue engineering. Mathematics plays a big part too.

Modules include:

- Introduction to Bioengineering
- Engineering with Living Systems
- Tissue Structure and Function
- Modelling, Analysis and Control
- Systems Engineering Mathematics
- Biomaterials

“I enjoyed the flexibility of the course mostly. I chose the Biomedical Engineering stream, but still had the opportunity to study plenty of other modules which piqued my interest.”

Name: Libby Rush
Graduated: 2017
Role: Graduate Control and Instrumentation Engineer
Company: Enrichment Technology Company

Name: Dr George Panoutsos
Role: Senior Lecturer in Human-Centric Systems
Department: Automatic Control and Systems Engineering

“The streams we offer are totally unique. They aren’t available as a collective on any other course in the UK.”
Course structure

Year two onwards
Choose your specialism

From your second year, you’ll take control of what you study by beginning to specialise on one of our four streams.

Medical Devices and Systems

Study the development of novel medical devices and the creation of new clinical engineering systems and tools which are used by medical practitioners, researchers and patients.

Modules include:
- Mathematics and Data Modelling
- Design and Manufacturing
- Robotics
- Future Electronic and Electrical Trends
- Bioimaging
- Intelligent Systems

Biomaterials

This stream focuses on materials processing and properties, human physiology, biomaterials and cell biology. You’ll learn how medical devices and biological constructs can be ‘engineered’ to address the breadth of future healthcare problems.

Modules include:
- Tissue Engineering Approaches to Failure in Living Systems
- Materials for Biological Applications
- Design of Medical Devices and Implants
- Bioimaging
- Engineering Biotechnology
- Proteomics and Bioinformatics
- Synthetic Biology

Biomedical Engineering

This stream covers the full breadth of the bioengineering discipline with a focus on the prevention, diagnosis and treatment of disease and the design of biomedical products.

Modules include:
- The Physiology of the Musculoskeletal System
- Biomechatronics
- Sports Engineering
- Multisensor Data Fusion
- Computational Fluid Dynamics
- Advanced Mechanics of Solids
- Design of Medical Devices and Implants

Biomanufacturing

You’ll learn how to meet the challenges faced by the biopharmaceutical industry on this stream, including the study of regenerative medicine, synthetic blood, antibody drug conjugates and new technologies to maintain quality of life in an ageing population.

Modules include:
- Mechanical Properties of Structural Materials
- Biology and Chemistry of Living Systems II
- Biochemical Engineering
- Biopharmaceutical Manufacturing
- Materials Modelling
- Fundamentals of Biomechanics
We produce highly employable graduates. The skills and knowledge you’ll gain on our courses will open up opportunities across a wide range of careers.

Supporting you to success

From one-to-one guidance on how to write persuasive applications to employer presentations and industrial seminars, our academic and pastoral staff work closely with the Careers Service and Engineering Employability Teams to deliver a comprehensive programme of tailored careers support in each year of study.

Transferable skills

You’ll graduate with both the engineering knowledge and transferable skills needed to excel in the jobs market:

- Project management
- Critical thinking
- Analytical and problem solving skills
- Team working
- Time management
- Communication
- Numeracy
- Presenting

£26.4k average starting salary

Destinations of Leavers from Higher Education survey, 2016

92% in graduate-level roles within six months

Guided by industry

Our work with industry doesn’t just shape our world-leading research - it also shapes our courses. We work closely with some of the UK’s leading healthcare and medical technology companies in a number of ways:

- Research collaborations
- Industrial Advisory Board informing how we run the courses and what we teach
- Student-industry networking opportunities
- Sharing the latest developments in the field
- Careers support and guidance
- Graduate recruitment opportunities

Where our graduates work

Our graduates are in demand internationally. Some go onto further study, undertaking PhDs in subjects such as Computational Medicine, Biomaterials and Tissue Engineering. Others have secured roles in a diverse range of careers, such as:

- Drug Safety Officer, Pfizer
- Biomedical Engineer, Medicorp
- Graduate Engineer, Johnson & Johnson
- Medical Writer, Evison Pharma Group
- Clinical Scientist, NHS
- Clinical Engineer, NHS
- Physics Teacher
- Software Engineer, Zethon
- Medical Device Specialist, Medicines and Healthcare Products Regulations Agency
- Applications Engineer, National Instruments
- Financial Engineer, First Derivatives

“Bioengineering at The University of Sheffield – Careers

Name: Jason Brannan
Role: Company Director and Bioengineering Industrial Advisory Board member
Company: Medilink (Healthcare Technology)

“The Bioengineering programme provides both fundamental and inspirational learning, whilst maintaining close links with industry to ensure high level academic endeavour is rooted in real-world development.”

Name: Simon Marchant
Graduated: 2013
Role: Clinical Engineer
Company: National Health Service (NHS)

“The course was excellent preparation for my role in the NHS. It gave me a good, all-round education in science and engineering and prepared me for the varied challenges I face in the workplace.”

Name: [Redacted]
Graduated: [Redacted]
Role: [Redacted]
Company: [Redacted]
Bioengineering at The University of Sheffield – A world-class learning environment

A world-class learning environment

You’ll benefit from outstanding facilities and support across campus.

The Diamond

Much of your learning will take place in The Diamond. Home to specialist engineering labs, lecture theatres, student study zones and an award-winning library, The Diamond offers a world-leading learning environment for our students.

Bioengineering facilities

We’ve invested £20 million in the very latest, industry-standard lab equipment. You’ll get to use it right from year one to contextualise your theoretical learning and give you practical, hands-on experience.

Name: Saheela Mohammed
Graduated: 2017
Role: Associate Engineer
Industry: Healthcare and Medical Device Manufacturing

“From the human dissection labs used for an anatomy and physiology module in the first year to the biomedical tissue labs used in later years, the facilities available have been world-class. Working on several hands-on projects, I was trained in the usage of specific software to design and make prototypes using 3D printers, as well as exploring microscopes and imaging systems for histological studies.”
A global leader in research and teaching, we give our students an unrivalled, rich experience in a city like no other.

With award-winning University accommodation, excellent transport links throughout the UK, a vibrant social scene and a low cost of living, Sheffield is an outstanding place to be a student.

Students and staff from across the world make up our vibrant, friendly Bioengineering community #WeAreInternational

Find out more

The information here is only the beginning. Head to our website to find out more, or get in touch with our dedicated team. They’re here to answer your questions and help you feel as informed as possible about studying with us.

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All information correct at time of print.