The Department of Bioengineering at Imperial College London is among the best in the world. We returned excellent results in the last three Research Assessment Exercises (2001, 2008 and 2014), making us the leading Department of Bioengineering in the UK. Imperial College itself was ranked 8th in the QS World University Rankings 2017-18.

1ST

IN THE 2018 GUARDIAN UNIVERSITY LEAGUE TABLE FOR GENERAL ENGINEERING

Housed in newly refurbished purpose-built space within the historic Royal School of Mines and its adjacent Bessemer building, our Department boasts state-of-the-art laboratories, including 'wet labs' for cell culture, chemistry, histology, flow studies, biosensors and electrophysiology, as well as 'dry labs' for modelling, electronics, 3D printing and imaging. The space has been designed to promote greater interaction among researchers- just what is needed for the interdisciplinary field that is bioengineering.

95% OF THE DEPARTMENT'S RETURNED RESEARCH WAS JUDGED WORLD-LEADING ★★★★ INTERNATIONALLY EXCELLENT ★★★

WHAT WE DO

Our academic staff have a wide range of research interests that fall under six main themes:

- Biomechanics and mechanobiology
- Molecular and cellular bioengineering
- Detection, devices and design
- Implants and regenerative medicine
- Neural engineering
- Human and biological robotics

STUDENT SURVEY 2016

% OF MEng STUDENTS

http://unistats.direct.gov.uk/Subjects/Overview/10003270FT-BH9C

(NSS 2017) 97% OVERALL STUDENT SATISFACTION

STUDYING WITH US

The Department offers two MEng undergraduate degrees and an intercalated BSc for medical students. The MEng Biomedical Engineering programme has been running since 2002, and the MEng Molecular Bioengineering programme from 2017. Both programmes lead to the award of a MEng degree. Graduates will also be awarded the Associateship of the City and Guilds of London Institute (ACGI).

The programmes provide a deep understanding of fundamental engineering principles, with extensive training in complex quantitative methods for analysis and design. The programmes nurture your curiosity and provide you with the skills required to solve real world problems- be they economic, environmental, ethical, legal or social. You will develop the practical skills to apply your knowledge of both engineering and the functioning of the human body, to contribute to the advancement of the biomedical and molecular sciences.

Bioengineering students have particular strength in working collaboratively at the boundaries of different subjects, because of the interdisciplinary nature of their training. Ultimately you will receive education and training that provides a solid basis for a career in bioengineering.

Students in the Department are well supported. The Department has state-of-the-art facilities, excellent pastoral support and a very engaged student community, including the Bioengineering Society. The society is run by students, for students, and offers a number of professional, networking and social events throughout the academic year.

YEAR ABROAD AND YEAR IN INDUSTRY

Students may be able to complete their final year in one of our partner institutions abroad. This is a great opportunity to challenge yourself personally in a different academic and cultural environment. Some students also complete a year in industry between third and fourth year, gaining valuable work experience and transferable skills.

INTERCALATED DEGREE

Undergraduate medical students studying for their MBBS qualification from Imperial's School of Medicine and from other UK or Irish institutions are able to spend their intercalated year in the Department studying bioengineering to achieve their intercalated BSc. This is a great opportunity for students to experience the benefits of interdisciplinary working first hand.

ENTRY REQUIREMENTS

Engineers use physical principles to understand the problems that face them. Often this involves using mathematical models to describe processes and systems, and to predict performance. As such, a thorough grounding in mathematics is essential for both our undergraduate programmes. In the first two years of the programmes, you'll develop your mathematical skills further, but you must demonstrate a high potential in this area before entering the programme.

In Biomedical Engineering and Molecular Bioengineering you'll need to apply an unusually broad range of scientific principles, and as the courses progress, you'll acquire expertise in many areas of science, including chemistry, biology and physics. We recognise that it is unlikely that you will have studied all sciences to a high level but a solid understanding of physics is essential for Biomedical Engineering and a solid understanding of chemistry is essential for Molecular Bioengineering.

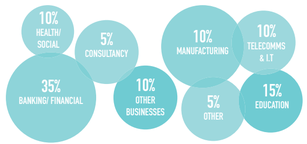
A*AA Degree entry requirements for A-level

AFTER GRADUATION?

Postgraduate Study
For over 25 years, the Department has taught a highly successful MSc course in Biomedical Engineering with its graduates now active in medically-related activities throughout the UK and the rest of the world. We also run an MSc in Human and Biological Robotics, MRes in Bioengineering, MRes in Medical Device Design Entrepreneurship, CDT in Neurotechnology (MRes+PhD) and PhD programme. We have a large number of research students, many of whom collaborate with other researchers at Imperial in other departments, the Institute of Biomedical Engineering and in the hospitals of the Faculty of Medicine.

Our courses are constantly evolving to capitalize on our world-leading and internationally excellent research.

Further details about postgraduate opportunities can be found in the Postgraduate Prospectus. This is available online at http://www.imperial.ac.uk/study/pg/courses/ or in print from the Admissions Office.



http://imperial.ac.uk/careers/exploring-your-options/destinations/undergraduates

Biomedical Engineering:
The normal requirements for applicants offering AS and A level and International Baccalaureate examinations are as follows:

- A level mathematics and physics, and one other A level subject, preferably further maths, chemistry or biology. These should be at least at grades A*AA.
- AS level chemistry and biology are useful though not essential if they have been obtained with at least a B grade at GCSE either individually or as components of combined science.
- International Baccalaureate including 6s in maths, physics and one other subject preferably chemistry or biology and an overall total of 38 points.
- Places will also be available to those with other equivalent qualifications and to applicants with appropriate educational experience or other competencies. Please go to our website for more details.

Molecular Bioengineering:
The normal requirements for applicants offering AS and A level and International Baccalaureate examinations are as follows:

- A level mathematics and chemistry, and one other A level subject, preferably biology, further maths, or physics. These should be at least at grades A*AA.
- AS level physics and biology are useful though not essential if they have been obtained with at least a B grade at GCSE either individually or as components of combined science.
- International Baccalaureate including 6s in maths, chemistry and one other subject preferably biology or physics and an overall total of 38 points.
- Places will also be available to those with other equivalent qualifications and to applicants with appropriate educational experience or other competencies. Please go to our website for more details.

CAREER OPPORTUNITIES

Graduates have excellent prospects in a wide range of careers, particularly in the growing healthcare and life science sectors. Because of the breadth and the multi-disciplinary nature of the courses, graduates will be welcomed in industrial, commercial and consulting areas, where analytical and problem-solving skills may be useful for a very wide range of applications. For the same reason, we expect that a substantial number of our graduates will follow research careers, both in industry and in academia all over the world.

Examples of student destinations:
- Research/further study: PhD at Imperial College London and PhD at Stanford University
- Industry: Bioengineer at Depuy and Device Development Engineer at Roche
- Start-up: Blocks (the world's first modular smart watch) and Customem (a selective membrane for energy efficient capture of micropollutants such as heavy metals from water)

Medical practice is becoming more reliant on technological and engineering advances, resulting in an increasing demand for doctors with technical expertise. Some of our students go on to enter graduate medical courses and follow a route eventually leading to MEng and MBBS degrees.

There are opportunities throughout the degree programmes to develop skills and experience through the undergraduate research opportunity programme, industry internships and enterprise projects.

A THRIVING COMMUNITY

17,000 Students

8,000 Academic, research and support staff

84 Fellows of the Royal Academy of Engineering

85 Fellows of the Academy of Medical Sciences

73 Fellows of the Royal Society

14 Nobel Laureates

2 Field Medallists

Imperial College London

WE ARE PROBLEM SOLVERS

WE ARE THE DEPARTMENT OF BIOENGINEERING

Why should you study bioengineering?
Because every day we are making healthcare smarter, safer and more effective. As engineers with medical understanding, we're able to solve the problems doctors can't, ultimately saving lives and improving people's overall wellbeing.

Through our in-depth understanding of biological processes at the molecular level we are able to create solutions to global issues in nutrition, energy, environment and healthcare. We are creating the future at the interface of engineering, healthcare and the life sciences.

WE ARE

BIOMEDICAL ENGINEERS

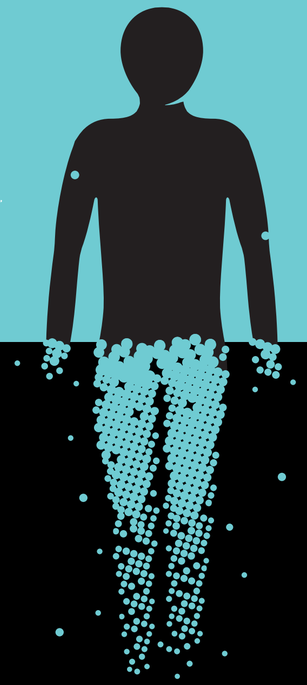
Fundamental topics are taught over the first two years, while advanced applied modules and research projects are undertaken in the final two years. Students on the programme have the option to specialise in their third and fourth years down one of the three distinctive pathways available: Biomedical Engineering, Electrical Engineering and Mechanical Engineering. The final year advanced modules include material from the MSc course in Biomedical Engineering, which we have been teaching since 1991.

Teaching throughout the course will be based on lectures, tutorials and practicals, as well as problem-solving and design classes. At different times during the course, students will work in teams or individually to design systems and equipment for biomedical applications.

The breadth and depth of the engineering knowledge of our MEng Biomedical Engineering students is illustrated by the accreditation by four professional engineering institutions: IET, IMechE, IOM3 and IPEM.

A TOP DOWN APPROACH

DEVELOP A BREADTH AND DEPTH OF ENGINEERING SKILLS AND KNOWLEDGE TO ADDRESS PROBLEMS IN MEDICINE AND BIOLOGY. THE BIOMEDICAL ENGINEERING PROGRAMME TAKES A 'TOP DOWN' APPROACH. THIS CONTRASTING BUT COMPLEMENTARY APPROACH MEANS GRADUATES FROM EACH PROGRAMME ARE UNIQUELY SKILLED.



ACCREDITED BY INSTITUTION OF MECHANICAL ENGINEERS (IMECHE)

ACCREDITED BY INSTITUTE OF MATERIALS, MINERALS AND MINING (IOM3)

ACCREDITED BY INSTITUTION OF ENGINEERING AND TECHNOLOGY (IET)

ACCREDITED BY INSTITUTE OF PHYSICS & ENGINEERING IN MEDICINE (IPEM)

FIRST YEAR

In the first year all modules are compulsory, and help you to build the core skills essential for the rest of the programme.

The modules will cover topics such as mathematics; electrical engineering; electromagnetics; programming; digital systems; mechanics; thermodynamics; medical science; biomolecular engineering; molecules and cells; and the real-world applications of bioengineering.

You will have regular personal tutorials with a member of academic staff to support you academically and pastorally.

SECOND YEAR

In the second year all modules are also compulsory. You will build on your knowledge and understanding gained in year one, and learn new material needed for the advanced years of the programme.

The modules will cover topics such as mathematics; signals and control; electrical engineering; electromagnetics; mechanics of fluids and solids; heat and mass transport; medical science; and programming.

You will also learn essential skills for mechanical workshops, and you will take part in a group engineering design project based on the sports innovation challenge.

THIRD YEAR

Your third year will comprise core and elective modules, as well as the excellent opportunity to complete a group project. There are three distinct pathways available on the MEng Biomedical Engineering programme:

- Biomedical Engineering
- Electrical Engineering
- Mechanical Engineering

Whichever pathway you choose, you will study the relevant core modules, select three elective options, and complete a group project.

Your elective options will include modules in specialised biomedical engineering topics such as biomechanics, biomedical instrumentation, or tissue engineering.

FOURTH YEAR

In your final year you will have the opportunity to complete an individual project.

You will also select six modules, allowing you to specialise in your chosen area of biomedical engineering.

You will be able to study advanced modules covering a range of topics such as medical device entrepreneurship, computational neuroscience, or biomimetics.

ASSESSMENT

Assessment includes formal examinations, problem solving, coursework, team and individual design projects and research projects. Assessment will take place throughout the course. The final year project begins early in the academic year and runs until the end of the academic year.

WE ARE

MOLECULAR BIOENGINEERS

The focus of the programme is developing a 'bottom up' understanding of the links between molecules, cells, tissues, organs and limbs generating function, health and disease within a bioengineering context.

Alongside a breadth of core engineering and biomedical engineering knowledge, graduates of the Molecular Bioengineering programme will have a specialist understanding of biochemical, physiological and biological processes coupled with excellent advanced practical laboratory skills in chemical biology, molecular biology, synthetic biology, analytical sciences, microfluidics and device engineering. Their unique skills will ensure they are extremely well placed to contribute to addressing the global challenges of today: the health and well-being agenda; personalised medicine; and new biomedical technology industries.

A BOTTOM UP UNDERSTANDING

DEVELOP SKILLS AND KNOWLEDGE IN ENGINEERING, BIOLOGY AND CHEMISTRY TO UNDERSTAND HOW VITAL MOLECULAR LEVEL INTERACTIONS CAN BENEFIT HUMAN HEALTH. THE MOLECULAR BIOENGINEERING PROGRAMME DEVELOPS AN UNDERSTANDING OF THE LINKS BETWEEN MOLECULES, CELLS, TISSUES, ORGANS AND LIMBS GENERATING FUNCTION, HEALTH AND DISEASE.

FIRST YEAR

In the first year all modules are compulsory, and help you to build the core skills essential for the rest of the programme.

The modules will cover topics such as mathematics; an introduction to electrical engineering and mechanics; programming; thermodynamics; digital systems; medical science; biomolecular engineering; molecules and cells; and the real-world applications of bioengineering.

Right from the start of the programme, you will spend significant time learning essential laboratory skills.

You will have regular personal tutorials with a member of academic staff to support you academically and pastorally.

SECOND YEAR

In the second year all modules are also compulsory. You will build on your knowledge and understanding gained in year one, and learn new material needed for the advanced years of the programme.

The modules will cover topics such as mathematics; signals and control; medical science; molecules, cells and processes; biomolecular engineering; and analytical sciences.

You will build on your laboratory skills, and you will also take part in a group engineering design project.

THIRD YEAR

Your third year will comprise of core and elective modules, as well as the excellent opportunity to complete a group project.

In the group project you will work with other students to understand, analyse and investigate a real-life engineering problem, and propose solutions.

Your elective options will include modules in specialised molecular bioengineering topics such as engineering solutions for cancer, modelling in biology, or tissue engineering .

SIGNIFICANT

TIME SPENT IN LABORATORY AND PRACTICAL LEARNING AND TEACHING ACTIVITIES

FOURTH YEAR

In your final year you will have the opportunity to complete an individual project. The completed thesis will be the result of significant, full-time individual study over six months.

You will also select five modules, allowing you to specialise in your chosen area of molecular bioengineering.

You will be able to study advanced modules covering a range of topics such as chemical sensors, synthetic biology, or physiological monitoring.

ASSESSMENT

Assessment includes formal examinations, problem-based learning, extensive additional specialised wet laboratories, multidisciplinary problem-based group projects, and research projects. Assessment will take place throughout the course. The final year project is extended to 6 months full time in the final year (as opposed to being interspersed with taught modules for a shorter period) and runs throughout the spring and summer terms.