ENGINEERING (BIOMEDICAL)
BEng /
UCAS CODE: HC60
2018 ENTRY

www.ucl.ac.uk/prospectus/medphys
This exciting programme provides a grounding in the practical application of engineering principles and design concepts to healthcare technologies. It draws on the research strengths of UCL and its excellent links to local hospitals, and prepares graduates to work in a wide range of technology areas from imaging and diagnosis to monitoring and treatment.

**Key information**

**Programme starts**
September 2018

**Location**
London, Bloomsbury

**Degree benefits**

- Academic lectures are supported by practical problem-solving tasks which develop understanding of teamwork, the design process and communication.
- We have close links to several major teaching hospitals and our staff work side-by-side with doctors and health professionals. Their expert knowledge will directly benefit your lectures and teaching sessions.
- Most biomedical engineering classes are small (fewer than 35 students) providing you with an informal, interactive teaching environment in which you can easily raise questions. Our department scored highly (89%) for overall satisfaction in the 2016 National Student Survey.
- The programme is highly interdisciplinary, drawing not only from the highly rated UCL Medical Physics & Biomedical Engineering, but also from a range of engineering and science subjects across UCL Engineering.

**Research Excellence Framework (REF) 2014**
The Research Excellence Framework, or REF, is the system for assessing the quality of research in UK higher education institutions. The 2014 REF was carried out by the UK’s higher education funding bodies, and the results used to allocate research funding from 2015/16.

- 95% rated 4* (‘world-leading’) or 3* (‘internationally excellent’)

Learn more about the scope of UCL’s research, and browse case studies, on our Research Impact website.

**Accreditation**
We are seeking accreditation for both the BEng and MEng in Engineering (Biomedical) from the Institution of Engineering and Technology (IET). We expect that both programmes will be CEng accredited and fulfil the educational requirements for registration as a Chartered Engineer (though if you have the BEng you will also need an accredited MSc).

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**Degree structure**

In each year of your degree you will take a number of individual modules, normally valued at 0.5 or 1.0 credits, adding up to a total of 4.0 credits for the year. Modules are assessed in the academic year in which they are taken. The balance of compulsory and optional modules varies from programme to programme and year to year. A 1.0 credit is considered equivalent to 15 credits in the European Credit Transfer System (ECTS).

We offer the option of studying a three-year Engineering (Biomedical) BEng or a more in-depth four-year Engineering (Biomedical) MEng programme. The first two years of study for both programmes are identical and transfer between the two is possible up to the end of the second year. We advise applying for the MEng initially which makes it easier to defer your decision.

In your first year, you will receive an introduction to biomedical engineering, including electronics and mechanics, with mathematical modelling and analysis, which are needed to design and develop complex medical technologies.

In year two, you will build upon the skills and knowledge you have already gained and take modules in areas of biomedical engineering such as anatomy and physiology, physics and biomechanics. You will also select an optional minor from a range offered across UCL Engineering and beyond, including programming, entrepreneurship or a foreign language.

In your third year you will study further modules from biomedical engineering and from your optional minor stream, and undertake a major project linked to research strengths across UCL Engineering and UCL’s substantial healthcare partners.

This degree is part of the Integrated Engineering Programme (IEP), a teaching framework that engages students in specialist and interdisciplinary activities designed to create well-rounded graduates with a strong grasp of the fundamentals of their discipline and a broad understanding of the complexity and context of engineering problems. Students register for a core discipline, but also engage in activities that span departments so the development of fundamental technical knowledge takes place alongside specialist and interdisciplinary research-based projects and professional skills. This creates degrees encouraging professional development, with an emphasis on design and challenging students to apply knowledge to complex problems.

**YEAR ONE**

<table>
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<tr>
<th>Core or compulsory module(s)</th>
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<tr>
<td>Engineering Challenges</td>
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<tr>
<td>Design and Professional Skills</td>
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<tr>
<td>Mathematical Modelling and Analysis</td>
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<tr>
<td>Medical Instrumentation 1</td>
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<td>Cardiac Engineering</td>
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<tr>
<td>Digital Electronics</td>
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<tr>
<td>Materials &amp; Mechanics</td>
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<td>Medical Imaging</td>
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<td>Physics of the Human Body</td>
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**Optional modules**

- All first year modules are compulsory.
YEAR TWO

Core or compulsory module(s)
- Design and Professional Skills
- Mathematical Modelling and Analysis
- Anatomy and Physiology
- Clinical Engineering
- Fundamentals of Biomechanics
- Medical Instrumentation 2
- Physics for Biomedical Engineering

Optional modules
- Modules from across UCL Engineering and beyond

FINAL YEAR

Compulsory modules (full-time)
- Biofluids
- Computing in Medicine
- Medical Electronics & Neutral Engineering
- Solid Biomechanics
- Individual Research Project

Optional modules
- Students choose modules from across UCL Engineering and beyond

Your learning
As well as attending lectures, you will also undertake tutorials and practical work, including projects. Projects are conducted in active, well-equipped research groups, often involving collaborations with local hospitals. Many biomedical engineering lectures and projects are taken by a mix of biomedical engineering, medical physics and medical students, reflecting the multidisciplinary nature of the work.

Assessment
Modules are normally assessed by a combination of coursework and end-of-year examination.

Your career
Engineers tend to be logical, numerate problem solvers and there is a demand for people who have developed such skills in a wide range of careers.

As the first cohort of students on the Engineering (Biomedical) programmes are not due to graduate until 2017, no information is currently available about their career destinations. Please see first destinations of recent graduates (2013-2015) from other Medical Physics and Biomedical Engineering programmes at UCL for a selection of representative careers.

// NHS Manager, St George’s Healthcare NHS Trust
// Trainee Clinical Scientist, King’s College Hospital NHS Trust
// Full-time student, PhD in Medical Physics at the University of Cambridge
// Administration Officer, Deloitte
// Buyer, Jaguar Land Rover

Your application
Application for admission should be made through UCAS (the Universities and Colleges Admissions Service). Applicants currently at school or college will be provided with advice on the process; however, applicants who have left school or who are based outside the United Kingdom may obtain information directly from UCAS.

Your application will be especially interesting to us if you can demonstrate your interest in the medical applications of physics and engineering. You should be motivated by a desire to apply your training to the pursuit of improvements in the diagnosis and treatment of disease. Relevant work experience, project work and your knowledge of issues and current affairs surrounding this field will assist your application.

Shortlisted candidates will be invited to tour UCL and the departments in which your teaching will take place. During your visit you will be able to view our facilities and meet staff and current students.
**Entry requirements**

**A LEVELS**

**Grades**
AAA-AAB

**Subjects**
Mathematics and Physics required; grade A in Mathematics preferred.

**GCSE**
English Language and Mathematics at grade C or 5. For UK-based students, a grade C or 5 or equivalent in a foreign language (other than Ancient Greek, Biblical Hebrew or Latin) is required. UCL provides opportunities to meet the foreign language requirement following enrolment, further details at: [www.ucl.ac.uk/ug-reqs](http://www.ucl.ac.uk/ug-reqs)

**IB DIPLOMA**

**Points**
36-38 overall.

**Subjects**
A score of 17-18 points in three higher level subjects, including Mathematics and Physics (grade 6 in Mathematics preferred), with no score lower than 5.

**OTHER QUALIFICATIONS**
UCL considers a wide range of UK and international qualifications for entry into its undergraduate programmes. Full details are given at: [www.ucl.ac.uk/otherquals](http://www.ucl.ac.uk/otherquals)

**UNDERGRADUATE PREPARATORY CERTIFICATES**
(International foundation courses)
The Undergraduate Preparatory Certificates (UPCs) are intensive one-year foundation courses for international students of high academic potential who are aiming to gain access to undergraduate degree programmes at UCL and other top UK universities.

Typical UPC students will be high achievers in a 12-year school system which does not meet the standard required for direct entry to UCL.

For more information see: [www.ucl.ac.uk/upc](http://www.ucl.ac.uk/upc).

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**TUITION FEES**
The fees indicated are for undergraduate entry in the 2018/19 academic year. The UK/EU fees shown are for the first year of the programme at UCL only. The Overseas fees shown are the fees that will be charged to 2018/19 entrants for each year of study on the programme, unless otherwise indicated below.

- UK & EU: £9,250 (2018/19)
- Overseas: £25,960 (2018/19)

Full details of UCL’s tuition fees, tuition fee policy and potential increases to fees can be found on the UCL Students website.

**FUNDING**
Various funding options are available, including student loans, scholarships and bursaries. UK students whose household income falls below a certain level may also be eligible for a non-repayable bursary or for certain scholarships. Please see the Fees and funding pages for more details.

**CONTACT**

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**EU referendum**
For up-to-date information relating to specific key questions following the UK’s decision to leave the EU, please refer to: [www.ucl.ac.uk/eu-referendum](http://www.ucl.ac.uk/eu-referendum)

**Disclaimer**
This information is for guidance only. It should not be construed as advice nor relied upon and does not form part of any contract. For more information on UCL’s degree programmes please see the UCL Undergraduate Prospectus at [www.ucl.ac.uk/prospectus](http://www.ucl.ac.uk/prospectus)