ENGINEERING (BIOCHEMICAL)
MEng / UCAS CODE: H813
2018 ENTRY

www.ucl.ac.uk/prospectus/biochemeng
Biochemical Engineering translates life science discoveries into new products and sustainable manufacturing processes. You will acquire the underpinning knowledge needed to produce biopharmaceuticals, make biofuels, manufacture vaccines or grow stem cells for therapy. The MEng offers an extra year on top of the Biochemical Engineering BEng to gain research experience and take advanced modules.

**Key information**

**Programme starts**  
September 2018

**Location**  
London, Bloomsbury

**Degree benefits**

// The department has among the most modern and comprehensive biochemical engineering facilities of any university in the world. Valued at over £35 million, our facilities attract leading industrial collaborators.

// Our teaching is designed to help you both work at a detailed, analytical level, and to see the bigger picture in terms of addressing environmental and ethical issues.

// The programme is professionally accredited by the Institution of Chartered Engineers (IChemE). It provides the essential entry point to Chartered Engineering Status (CEng).

// We have been pioneers in providing our undergraduates with training to help them understand the business environment in which the life sciences operate. This will prepare you better for your future career.

**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.

// 90% 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**  
This programme is accredited by the Institution of Chemical Engineers (IChemE) as satisfying the academic requirement for registration as a Chartered Chemical Engineer.

**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).

The Engineering (Biochemical) BEng and MEng share a common curriculum of core modules. These are designed to introduce you to biochemical engineering through lectures and use of practical training facilities.

You may reassess your choice of degree programme towards the end of the second year, when you have gained a deeper knowledge of what the subject involves. This gives you greater control over your study and career plans.

In all years you will supplement compulsory modules by selecting options to match your own interests. You may choose to complete your degree with a BEng qualification at the end of year three. However, we advise you to apply for a four-year MEng programme initially as this gives you the most control over your plans.

MEng students may then choose to join one of the following additional routes: Bioprocess Management; Chemical Engineering; Study Abroad; or Year in Industry. The Study Abroad route enables students to spend their third year at a selected university in Europe (including Denmark, France, Germany, Spain, Sweden and Italy), the USA, Hong Kong, Japan or Australia.

This degree is part of the Integrated Engineering Programme (IEP), a teaching framework that engages students in specialist and interdisciplinary engineering 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 that encourage professional development, with an emphasis on design and challenging students to apply knowledge to complex problems.

**YEAR ONE**

**Compulsory subjects**

// Biochemistry and Molecular Biology  
Bioprocess Analysis  
Chemistry for Biologists  
Fluid Flow and Mixing in Bioprocesses  
Introduction to Biochemical Engineering  
Introductory Statistical Methods and Computing

**Optional modules**

// One Minor module from the IEP options that are available.
YEAR TWO

Core or compulsory module(s)
- Biochemistry of Protein Production
- Bioprocess Recovery and Purification
- Design and Professional Skills II
- Fermentation and Bioreactor Engineering
- Heat and Mass Transfer
- Mathematical Analysis and Modelling II

Optional modules
- One Minor module

YEAR THREE

Core or compulsory module(s)
- Advanced Materials, Devices and Manufacturing Processes for Regenerative Medicine
- Bioprocess Research Project
- Regenerative Medicine
- Vaccine Bioprocessing

Optional modules
- One Minor module

FINAL YEAR

Core or compulsory module(s)
- Route: Biochemical Engineering:
  - Bioprocess Systems Engineering
  - Bioprocess Validation and Quality Control
  - Cell Therapy Biology, Bioprocessing and Clinical Translation
  - Industrial Synthetic Biology
  - Bioprocess Research Project
- Route: Chemical Engineering:
  - Advanced Safety and Loss Prevention
  - Fluid-particle Systems
  - Process Dynamics and Control
- Route: Bioprocess Management:
  - Advanced Bioprocess Business Plan
  - Bioprocess Research Project
  - Bioprocess Systems Engineering
  - Bioprocess Validation and Quality Control
  - Business in a Competitive Environment
  - Cell Therapy Biology, Bioprocessing and Clinical Translation
  - Project Management
- Route: Study Abroad:
  - You will undertake a research project at an approved European Union, North American, South-East Asian or Australian university.
- Route: Year in Industry:
  - You will spend your final year in industry.

Optional modules
- Students on the Biochemical Engineering and Chemical Engineering routes will select credits from a wide range of optional modules.
- Please note: As part of the faculty-wide Integrated Engineering Programme the degree will be broken down into three main components:
  A) Discipline-specific material to biochemical engineering;
  B) Common engineering elements taught within UCL Engineering; and
  C) Optional modules in the form of Minors.

Your career

The core science, engineering, business and leadership skills that you acquire will provide you with excellent and diverse career prospects. In addition to your core subject knowledge, the programme will provide you with skills such as innovative thinking, team-working and computing.

The excitement of taking biological advances towards new medicines and greener sustainable processes is creating an ever-growing need for biochemical engineering graduates in the biotechnology, pharmaceutical, biofuels, chemical, environment and food industries.

First destinations of recent Biochemical Engineering MEng graduates (2013-2015) at UCL include:
- Process Engineer, GSK (GlaxoSmithKline)
- Supply Chain Graduate, RB (Reckitt Benckiser)
- Full-time student, EngD in Biochemical Engineering and Bioprocess Leadership at UCL
- Finance Consultant, Longview Partners
- Bioprocess Consultant Engineer, Biopharm Services

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.

In addition to academic requirements, we will use your application to assess your motivation for studying biochemical engineering. We will be seeking applicants committed to studying at the highest level, who are both eager and able to rise to the challenges presented both by the programme and by a career in the discipline.

If we are considering making you an offer, and you live in the UK, you will be invited to an applicant open day. Your visit provides an excellent opportunity to examine the departmental facilities before making a final decision.

Your learning

You will be taught through a combination of lectures, case studies, team-based projects and experiments. Leading industrialists and researchers regularly visit the department to provide guest lectures. Case studies are conducted in small teams, and your personal and departmental tutors are available to provide individual support.

Assessment

Written examinations, individual reports, coursework and oral presentations all contribute towards your assessment.
Entry requirements

A LEVELS
Grades
A*AA-AAA
Subjects
Mathematics required, plus one from Biology, Chemistry or Physics.

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

IB DIPLOMA
Points
38-39 overall.
Subjects
A total of 18-19 points in three higher level subjects including Mathematics, plus one from Biology, Chemistry or Physics, with no score below 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

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.

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
Several major international companies have established a Trust Fund with the department. This fund provides five bursaries, each worth at least £1,500, which are open to all applicants.

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.

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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

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