University of Birmingham

Chemical and Energy Engineering with Industrial Study BEng

Undergraduate degree course Chemical and Energy Engineering with Industrial Study BEng H890:

Chemical Engineering is dynamic and evolving. It provides many solutions to problems facing industries in the pharmaceutical, biotechnological, oil, energy and food and drink sectors. It is vital to many issues affecting our quality of life; such as better and more economical processes to reduce the environmental burden, and more delicious and longer lasting food due to the right combination of chemistry, ingredients and processing.

Birmingham is a friendly, self-confident, School which has one of the largest concentrations of chemical engineering expertise in the UK. The School is consistently in the top five chemical engineering schools for research in the country.

It has a first-class reputation in learning, teaching and research, and is highly placed in both ***The Guardian*** and ***The Times*** league tables. The School was recently awarded the **Queen's Anniversary Prize for Higher Education.**

THE QUEEN'S ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2011

Study here and find out why the University of Birmingham has been awarded The Times and The Sunday Times University of the Year 2013-14 (http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx)

Course fact file
UCAS code: H890
Duration: 4 years (3 + 1 in industry)
Places Available: 120 (Total number of places for all BEng/MEng Chemical Engineering Courses).
Applications in 2013: 977
Typical Offer: AAA*, AAAA also accepted. (**More detailed entry requirements and the international qualifications accepted can be found in the course details (?OpenSection=EntryRequirements)**)
Start date: September

Related courses

Undergraduate degree courses - School of Chemical Engineering (/schools/chemical-engineering/undergraduate/degree-courses.aspx)

Contact

Admissions Tutor: Dr Anita Ghag
Telephone enquiries: +44 (0)121 414 5333
Email: **ug-admis-chem-eng@bham.ac.uk (mailto:ug-admis-chem-eng@bham.ac.uk)**

School of Chemical Engineering (/schools/chemical-engineering/index.aspx)

Follow us on Twitter (http://twitter.com/eps_unibham)

Details

This three-year plus one year in industry, accredited, course has a student satisfaction rating of 95%. It has been designed to be relevant to the needs of modern industry and to produce graduates who have the personal and intellectual qualities to be successful in their chosen careers. By the end of the course, you will be equipped to play leading roles in a professional capacity in both industry and academia, and thus able to deal with issues at the forefront of the discipline. Once fully qualified you will:

- have a systematic and diverse knowledge of modern Chemical Engineering, which embeds biochemical engineering, sustainable processing and environmental impact

- work effectively as a Chemical Engineer in a professional capacity
- understand novel developments and problems at the forefront of the discipline
- evaluate current research critically, and be original in the application of your knowledge
- be self-motivated and work autonomously
- apply your technical knowledge and intellect to solve Chemical Engineering problems
- make sound engineering judgements in the absence of complete information
- use transferable skills to communicate effectively and work as part of a team
- take responsibility for your continuing personal and professional development
- have the fundamental grounding required to take you to the next part of your journey to becoming a professional chemical engineer.

This three-year plus one year in industry course will give you the fundamental grounding required to take you to the next part of your journey to becoming a professional chemical engineer.

Course structure

The course offers a modular programme of study, which normally leads to the award of Bachelor of Engineering (BEng) in three years plus one year in industry. A breakdown of modules and credits can be seen in the **curriculum summary (pdf). (/Documents/college-eps/chemical/courses/H890-chemical-engineering-energy-industrial-beng.pdf)** .

First year

Here you are introduced to the fundamentals of chemical and energy engineering and the chance to learn about other engineering disciplines. Here, also, you will begin to develop the transferable skills that will carry you through your course, and beyond, into your life as a professional engineer. One major, optional, opportunity to hone these skills and put many of them into practice, is attendance on our residential course at the University's own outward bound centre in the Lake District. IT skills will be taught in our purpose-built computing facility.

Second year

Themes begun in the first year are developed to the standard you need as a professional engineer. You study advanced heat and mass transfer, reactors and catalysis, unit operations and sustainability. Emphasis is placed on teamwork and the use of our research laboratories is exploited.

Third year

The third year develops the chemical engineering fundamentals further, to graduate level. All students undertake an industry-linked design project which enables them to put into practice all of the skills they have gained.

Year in Industry

You have the option to spend a year in industry at the end of your second year. We have strong links with a large number of key companies to assist you, including Procter & Gamble, Unilever, BP, EDF, ConocoPhilips, PepsiCo, Jaguar/Land Rover, ExxonMobil, Cadbury, AstraZeneca, Johnson Matthey and GlaxoSmithKline as well as with smaller to medium enterprises. Typically you will have to pass the interview process run by the company with which you are seeking a placement. The industrial placement gives you experience of working in the chemical engineering field which will enhance your CV and allow you to acquire further knowledge and employability skills. Our industrial liaison tutor will be able to advise you about the application procedures.

Generic skills-training , focusing on transferable skills and employability, is embedded throughout the course from the outset, and will ensure that you are equipped with the ICT, presentation, team-working and problem solving skills which will enhance your employability on graduation.

BEng or MEng? The first two years of the BEng course are identical to our **Master of Engineering (MEng) programme H891 (/undergraduate/courses/chemical-engineering/chemical-engineering-energy-industrial-meng.aspx)** , which means that you can delay your final choice of degree until the end of your second year. Entry onto the MEng programme is dependent upon successful completion of your second year and you must provide excellent results (i.e. be on target for a minimum of a high 2ii).

Related links

- **Undergraduate degree courses - School of Chemical Engineering (/schools/chemical-engineering/undergraduate/degree-courses.aspx)**
- **Scholarships and prizes (/schools/chemical-engineering/undergraduate/scholarships-prizes.aspx)**
- **Energy at Birmingham (/research/activity/energy/index.aspx)**

Why study this course

At Birmingham, we provide diverse, yet balanced, courses, enabling our graduates to gain employment in a wide range of industries. Teaching is provided by lecturers who are global experts in their field, with multi-million pound investment providing leading-edge teaching facilities and laboratories.

We produce graduates who can function in today's fast-changing marketplace, and your career prospects will be excellent. Your Birmingham degree is evidence of your ability to succeed in a demanding academic environment.

Employers target Birmingham students for their drive, diversity, communication and problem-solving skills, their team-working abilities and cultural awareness, and our graduate employment statistics have continued to climb at a rate well above national trends.

Modules

- **Summary of modules for this programme (pdf) (/Documents/college-eps/chemical/courses/H890-chemical-engineering-energy-industrial-beng.pdf)**

Fees and funding

Standard fees (http://www.birmingham.ac.uk/students/ug/courses/fees/standard) apply.
Learn more about **fees and funding.**

(/undergraduate/fees/loans.aspx) Scholarships:

- Please view **scholarships and prizes for Chemical Engineering undergraduates (/schools/chemical-engineering/undergraduate/scholarships-prizes.aspx)** for further information
- Also see the **University of Birmingham' scholarships and awards (/undergraduate/fees/funding/index.aspx)** page.

Entry requirements

Number of A levels required: 3

Typical offer: AAA*, AAAA also accepted.

Required subjects and grades: A level Chemistry and Mathematics (M1 Mechanics module or AS Physics is preferred instead of Statistics module). If Statistics is offered, applicants should also offer AS level Physics.

General Studies: not accepted

Additional information:

International Baccalaureate Diploma: 36 points including Mathematics and Chemistry at HL grade 6. We will consider SL Mathematics grade 7.

Irish Leaving Certificate qualifications: A1 & A in Maths and Chem, A in English and AAA.

Other qualifications are considered please contact the Admissions Tutor for clarification.

International students:

International Baccalaureate Diploma: 34-36 points including Mathematics and Chemistry at HL

Standard English language requirements apply (http://www.undergraduate.bham.ac.uk/entry/international.shtml#requirements)
Learn more about **international entry requirements (http://www.birmingham.ac.uk/students/ug/requirements/international)**

Depending on your chosen course of study, you may also be interested in the Birmingham Foundation Academy, a specially structured programme for international students whose qualifications are not accepted for direct entry to UK universities. Further details can be found on the **foundation academy web pages (http://www.birmingham.ac.uk/students/foundation-academy/Pathways/index.aspx)** .

How to apply

Apply through UCAS at **www.ucas.com (http://www.ucas.com/)**
Learn more about **applying (http://www.birmingham.ac.uk/students/ug/courses/apply)**

Key Information Set (KIS)

Key Information Sets (KIS) are comparable sets of information about full- or part-time undergraduate courses and are designed to meet the information needs of prospective students.

All KIS information has been published on the Unistats website and can also be accessed via the small advert, or 'widget', below. On the **Unistats website (http://unistats.direct.gov.uk)** you are able to compare all the KIS data for each course with data for other courses.

The development of Key Information Sets (KIS) formed part of HEFCE's work to enhance the information that is available about higher education. They give you access to reliable and comparable information in order to help you make informed decisions about what and where to study.

The KIS contains information which prospective students have identified as useful, such as student satisfaction, graduate outcomes, learning and teaching activities, assessment methods, tuition fees and student finance, accommodation and professional accreditation.

Related links

Undergraduate degree courses - School of Chemical Engineering (/schools/chemical-engineering/undergraduate/degree-courses.aspx)

Scholarships and prizes for Chemical Engineering undergraduates (/schools/chemical-engineering/undergraduate/scholarships-prizes.aspx)

Birmingham Energy Institute (BEI) (/research/activity/energy/index.aspx)

Related news and events

Chemical Engineering at Birmingham ranks high in Guardian league tables (/schools/chemical-engineering/news/birmingham-high-guardian-league-tables.aspx)

Learning and teaching

Personal Tutor
At the start of your degree, you will be assigned a Personal Tutor who will remain with you throughout your studies to help you in three important areas: supporting your academic progress, developing transferable skills and dealing with any welfare issues.

Delivery of the course
In your first and second years, the course is delivered as lectures, small group workshops, laboratories, computer-based activities, enquiry-based learning and tutorials. A strong emphasis is placed on design project work in your third year.

Practical work forms an integral part of the School?s degree programmes. Laboratory classes are embedded within modules in years 1 and 2 and used, not only to develop your experimental practical skills, but also to reinforce concepts introduced in lectures or to explore a particular phenomenon. Many of these classes take place in the Dearden Laboratory created in 2011.

Tutorials/personal tutorials run alongside the lecture course, addressing any individual problems you may have and allowing you to consolidate the lecture material, as well as test your understanding through problem-solving exercises. Your Personal Tutor is assigned to you at the start of your course and remains with you until graduation, helping you in three important areas: supporting your academic progress, developing transferable skills and helping with welfare issues.

Enquiry Based Learning (EBL) provides an environment where your learning process is driven by enquiry. The lecturer?s role is purely as a facilitator. Typically a group activity; this requires working in a team and you can be assessed in a variety of ways: in either a group or individually, by written reports and sometimes as a presentation. EBL will give you a research-orientated approach to a problem, and has a synergy within research-led institutions like the University of Birmingham.

Project work is critical to chemical engineering and this is taught through the design project. The projects are run in collaboration with industrial partners and taught by small group tutorial consultations where emphasis is on developing your design and communication skills to solve problems. If you are an MEng student you will undertake a research project. You can choose from a wide range of topics and will be supported by an academic whose research interests have lead to that project being offered.

Assessment methods

The course modules are taught through lectures, tutorial problem classes, laboratories and/or project work. Assessment methods used are examinations, written assignments and laboratory and project reports. The balance of examinations and coursework for an individual module reflects the nature of the subject being covered. Some courses are evaluated purely by examination while others only by coursework. A strong emphasis is placed on project work in the third and fourth years. Examinations are taken in May and June.

We place strong emphasis on providing prompt and informative feedback on all pieces of work that you submit during your studies. Feedback comes in a variety of forms, including written feedback on pieces of assessment, class feedback sessions and one-on-one discussions with your tutors. In all cases, the feedback will highlight the good points as well as those areas that require more attention.

During your first year the University will require you to undergo a formal 'transition' review to see how you are getting on and if there are particular areas where you need support. This is in addition to the personal tutor who is based in the School and can help with any academic issue you encounter.

At the beginning of each module, you will be given information on how and when you will be assessed for your particular programme of study. You will receive feedback on each assessment within four weeks, so that you can learn from and build upon what you have done. You will be given feedback on any exams that you take; if you should fail an exam, we will ensure that particularly detailed feedback is made available to enable you to learn for the future.

Employability

Your career prospects on graduation from our School will be outstanding. The chemical, pharmaceutical, oil, energy and food industries are amongst the wealthiest and can afford to pay top salaries to high-flying graduates from accredited courses such as ours. Feedback shows that 93% of students on this course go straight into work and/or further study after graduating and those in work are, typically, earning in the range £25,000-£29,000 pa six months after graduation. Of those working, 95% are doing professional/managerial jobs.

Manufacturing and other areas of science and technology, such as environmental protection or sustainable energy, also have employers with large power bases where great careers can be forged. Other areas that favour the skills you will acquire are finance, law and marketing as well as teaching and/or research; all vital areas of society requiring input from the finest young minds.

Superb opportunities exist for you to gain industrial experience *before* you graduate and a rich vein of expertise will be available for you to tap into to help you to find employment:

At School-level, you can opt to add a year to your programme, whatever the course you are studying, and spend this time on placement in industry. You will gain relevant work experience, and earn money putting into practice the skills and knowledge gained from your degree. Students on placement get involved in serious projects which ask searching questions that require good engineering answers - and which often lead to sponsorship and/or the offer of a graduate job. On successful completion of a placement in industry organised by the School, and success in your studies, you will be awarded the Certificate in Industrial Studies to add to your degree and improve your employability prospects.

At University-level, our unique careers guidance service is tailored to academic subject areas, offering a specialised team (in each of the five academic colleges) who can give you expert advice. Our team sources exclusive work experience opportunities to help you stand out amongst the competition, with mentoring, global internships and placements available to you. Once you have a career in your sights, one-to-one support with CVs and job applications will help give you the edge. In addition, our employer-endorsed award-winning **Personal Skills Award (PSA) (https://intranet.birmingham.ac.uk/as/employability/psa/index.aspx)** recognises your extra-curricular activities, and provides an accredited employability programme designed to improve your career prospects.

Whichever of the above forms of careers guidance, or combination of such, you select you will find your prospects for employment after graduation considerably enhanced. If you make the most of the wide range of careers advice we can offer, you will be able to develop your career from the moment you arrive.

Emma Roberts, who studied one of our courses, said:
'Both my work and placements helped to put my studies in context and make informed career decisions.' 'The course I took gave me an excellent foundation for a career in chemical engineering; good lab work in the first few years really put the lectures in context.
An emphasis was placed on how engineering applies to the real world, which was exactly what I was looking for in a degree course. Industrial experience taught me a lot about time management, working in a team and being flexible; and the course gave me an excellent foundation for my career with BP.'

University Careers Network

Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our Careers Network can help you achieve your goal.

If you make the most of the **wide range of services (https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx)** you will be able to develop your career from the moment you arrive.

Examples of employers:

- BP
- British Gypsum
- Citi
- Coca-Cola
- Foster Wheeler Energy

- Jacobs Engineering
- Johnson Matthey
- KBR
- Pepsico
- RBC Capital Markets

Examples of occupations:

- Chemical Engineer
- Development Engineer
- Finance Analyst
- Market Analyst
- Performance Engineer
- Process Engineer
- Process Development Technologist
- Process Support Engineer
- Team Leader
- Test and Validation Engineer

Further study - examples of courses:

- MRes Chemical Engineering Science
- MSc Advanced Chemical Engineering
- MSc Biochemical Engineering
- MSc Chemical Engineering
- PhD Chemical Engineering
- PhD Formulation Engineering
- PhD Regenerative Medicine
- PGCE Mathematics

Visit the **Careers section of the University website (https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx)** for further information.

Professional accreditation

Our Chemical Engineering programmes are accredited by the Institution of Chemical Engineers.

94% Students agreed staff are good at explaining things

BEng (Hons) Chemical and Energy Engineering with Indu.
Full time
Sandwich year

To see more details and compare with other courses
Visit UNISTATS
Official data collected by HEFCE

© University of Birmingham 2014