Chemical Engineering and Biotechnology

Contents

Chemical engineering and biotechnology 5
Chemical engineering and biotechnology at Cambridge 7
Your qualification 9
Teaching and facilities 11
Support during the course 13
After Cambridge 14-15
Course structure 16-19
Discover more about chemical engineering at Cambridge 21
Chemical Engineering and Biotechnology

From sustainable water, food and energy, to healthcare solutions, chemical engineers and biotechnologists help solve the challenges facing the world today and tomorrow.

Learn about designing processes and transforming raw materials into valuable products using environmentally and economically sustainable methods.

Key information

Typical entry requirements
A level: A*A*A, including Maths and Chemistry
IB: 40 to 42 points, with 776 higher level
See full list of entry requirements

About
UCAS code: H810
MEng, 4 years of study
Or BA (Hons) degree, 3 years of study

Annual intake up to 70 students

Colleges
Available at all Colleges

Tuition fees
Visit our undergraduate website for full details about tuition fees

Contact details
Website: www.ceb.cam.ac.uk
Email: admissions@ceb.cam.ac.uk
Telephone: +44 (0)1223 748 999
You'll study the scientific principles that are principles used to develop processes and products and be able to apply them to real world systems. As part of your studies key concepts taught in the course concern topics in process engineering, biotechnology, and sustainable practice. You'll learn how to take an idea from concept to a practical process that can manufacture products sustainably and on an industrial scale.

You'll cover:

- Introduction to pure and applied sciences
- Fundamentals in chemical engineering and biotechnology
- Industrial process design and applications
- Energy technology, sustainability and advanced design

Our course is supported by a Teaching Consortium of industrial companies.
Most students complete the course in four years and graduate with an MEng qualification.

Both the BA (Hons) and the MEng courses are accredited at the appropriate level by the Institution of Chemical Engineers. This means that after graduation and 4 years of relevant experience, you can apply for Chartered Engineer status without taking more exams. Certain jobs, and higher salaries, in industry are offered only to those who have Chartered Engineering status.
We are housed in a new building with state-of-the-art facilities to support our world-leading research and teaching activities.

We are consistently ranked in the top five departments in the world in any metric related to teaching and research.

We are ranked number one in The Complete University Guide and The Guardian’s league table for chemical engineering.

Find out how we compare with other universities from Discover Uni

Our Department offers high quality teaching and research, delivered by internationally renowned research academics. Find out more about the academic staff in our department.

We work from a purpose-built bespoke building, adjacent to the University Sports Centre, on the West Cambridge site. We have excellent lecture facilities, a recording studio, brand-new teaching and biotechnological laboratories, breakout spaces for small-group teaching and a MakerSpace.
We have a strong community of scientists across all levels in the department that encourages informal learning.

Colleges also provide pastoral support via a tutorial and welfare system, as well as providing access to accommodation, food, clubs and societies.

**Kogulan Vipulan**
Second year undergraduate

"The lab technicians are super helpful and make the practicals a joy!"
There are many well-paid career opportunities within the fields of chemical engineering and biotechnology.

Previous graduates have worked as engineers or scientists in industry, in finance or management consultancy, or have gone on to take higher degrees. You’ll acquire a wide variety of skills that also offer career opportunities outside the discipline.

Find out what our alumni are doing now.

Aiden Goulden, Senior Process Engineer at Johnson Matthey

“Studying Chemical Engineering at Cambridge was brilliant preparation for a career in the field. The theoretical nature of the course developed my problem-solving skills, which is extremely useful in my day-to-day role as a process engineer on a manufacturing site”

Alice Elder, Water Quality and Non-Infra Strategic Asset Manager at Affinity Water

“The greatest challenges and uncertainties we currently face are climate change and our net zero carbon emissions targets. My team will develop long-term plans to ensure we can safeguard safe water supply that meets our customers’ needs and protect the environment”

Pawat Silawattakun, Innovation Tax Assistant Manager at Grant Thornton UK

“The Chemical Engineering course at Cambridge is multifaceted, providing both a great depth of knowledge and an extensive breadth of experience. Personally, this was exciting, as it tested me in my ability to deliver strong results on very technical content, whilst also asking for excellent presentation skills and regular collaborative group work”

Tim Murray, Leading change in the grocery sector | Partner at Newton

“I found the course to strike a great balance of interesting science and practical engineering. There is also a lovely friendly feel to the department which made the course a real joy. I have found the problem-solving techniques I learnt invaluable in my career at Newton. In my job I am constantly having to understand complex manufacturing, supply chain challenges, and work out practical solutions.”
Course structure*

*Some details of the course may change from those listed here

First year

In your first year, you will develop your knowledge of pure and applied sciences underpinning Chemical Engineering and Biotechnology. You’ll also be introduced to process and product design.

Modules

You’ll study courses covering these topics:

- Introduction to chemical engineering and biotechnology
- Chemistry
- Cell biology
- Fundamentals of Chemical Engineering
- Materials
- Reaction engineering
- Sustainability
- Engineering design and manufacturing
- Mathematics
- Practical classes in chemistry, cell biology and engineering/mechanical design.

Assessment

This will be a mixture of continuous assessments and coursework with exams at the end of the year.

In a typical week, you’ll:

- Attend 10 lectures
- Have 3 to 4 supervisions (These are small group meetings to guide independent study)
- Complete approximately 1 to 2 practical classes
- Work on projects and coursework

Second year

You’ll build on the material in year one to learn about core applications in chemical engineering and biotechnology, such as separations and reaction engineering.

Modules

You’ll study courses covering these topics:

- Engineering maths and computational methods
- Practical classes in chemical engineering and biotechnology
- Biotechnology fundamentals

- Biotechnology fundamentals
- Thermodynamics and fluid mechanics
- Heat and mass transfer
Course structure

Third year
In the first term, you’ll continue to develop your understanding of core applications from the second year.

Modules
You’ll study courses covering these topics:
- Advanced thermodynamics and fluid mechanics
- Biotechnology applications
- Solids processing
- Process control and design
- Safety, health and Environment
- Design project

Fourth year
You’ll study advanced chemical engineering and biotechnology topics and their applications. You’ll complete a research project supervised by academics in our department. There will also be optional subjects from a range of advanced topics.

Modules
You’ll study courses covering these topics:
- Energy technology and sustainability
- Advanced design
- A choice of advanced topics
- Research project

Entry requirements
A level: A*A*A
Your A levels must include mathematics and chemistry. Physics, further maths or biology are the preferred third subjects.

IB: 40 to 42 points, with 776 higher level
Your IB must include higher level mathematics and chemistry. Another mathematical or science subject is preferred for your third subject.

If you have studied other qualifications, check the entrance requirements.

You will also have to take the Natural Sciences Admissions Assessment as part of your application.
Discover more about chemical engineering and biotechnology at Cambridge

Find out more about the subject, what it's like to study in the department, what careers you can work in and about the vibrant student social scene.

Attend an [open day or event](#)

Contact us

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