MSc (Eng) Biological and Bioprocess Engineering.

Bioscience based industries represent a new frontier for chemical engineering; this emerging multi-discipline can be utilised for diverse purposes: sources of energy, food and medicine.

Entry Requirements
Candidates must be:
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• or deemed qualified as a result of wide work experience
• International students must have International English Language Testing Service (IELTS) with average of 6.5 or above with at least 5.5 in each component or equivalent.

Please contact us if you are not sure whether your qualifications are suitable for the course.

Course Accreditation
This course is accredited by Institution of Chemical Engineers (IChemE).

World class facilities
The Department of Chemical and Biological Engineering is home of the CBI Institute which is unique bio-engineering centre with extensive capabilities, staff by experts in bio-systems and bioprocessing. As an MSc (Eng) student with us you will have access to facilities supervised by the best faculty and people in the field. To learn more about CBI visit: www.sheffield.ac.uk/chelsi

The Department is part of the Faculty of Engineering – one of the largest in the country. We are justifiably proud of our research facilities which include up-to-date laboratories, extensive computing facilities and very modern, purpose built applied science library. Chemical and Biological Engineering occupies a modern building with four lecture theatres and numerous well-equipped laboratories for postgraduate work. In addition there are extensive computer facilities.

We encourage a friendly and informal atmosphere in the Department. A central lounge acts as a focal point for both undergraduate and postgraduate activities. Graduate students in the Department have a flourishing society (GRAND) which organises industrial visits, social and sporting events.

World-renowned experts in many fields.

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Course Structure
The MSc (Industrial) and MEng (Process Engineering) are offered on a full-time basis over one year. Students selecting eight modules and a research project broadens your outlook and develops your research and project identification. You will be able to understand the strategic and environmental challenges and solutions of an engineering project on a local, regional, national, and international scale, and to identify opportunities, understanding of the role of the Industrial Engineer in collaboration with other university research centres or industrial organisations.

The course is modular, allowing students some flexibility in the design of their degree. Students must take the five core modules and choose three from a range of optional modules.

The MSc (Industrial) students will take:
- six compulsory modules
- optional modules (Chosen 3)
- a major research project

Core Modules
For Biosciences graduates: Principles of Biochemical Engineering
Almost all bioscience graduates will introduce core concepts of biochemical engineering knowledge and practical experience in many areas in health, agri-food, and materials engineering.

For Engineering graduates: Principles of Bioenergy Sciences
Graduates in any of the engineering disciplines can benefit from the foundational principles of biochemical and biological engineering. You will develop an understanding of the knowledge and skills that are used in the design and manufacture of chemical, biochemical, mechanical, and materials engineering systems.

Research methods in Biochemical Engineering
Students will gain an appreciation of the philosophial approaches of research in biochemical engineering and an understanding of why research is conducted within these fields and its applications in industry. You will learn about the ethical responsibilities of research and data handling.

Bio systems Engineering & Computational Biology
This module aims to introduce the fundamentals of systems biology and its application in the engineering of biological systems. You will gain the principles and applications of systems-oriented approaches to problems. You will learn about different approaches for the design and implementation of systems biology.

Biochemical and Bioprocessing
Provides students with the awareness of biotechnology product development and understanding. You will learn about the fundamentals of systems biology and bio-processing, metabolic engineering, and design and operation of industrial processes, and fermentation and options engineering.

Optional Modules
Synthetic Biology
Synthetic biology is a rapidly emerging field that seeks to employ engineering principles and methodology to the design and construction of organisms for useful purposes. These applications include the design and construction of living cells and microbiomes to perform specific functions, both beneficial and harmful, as well as the legal implications that should synthetic biology.

Advanced Biofuels
This module explores the current and emerging technologies for the production of biofuels. You will learn about the processes involved in the production of biofuels, including ethanol, hydrogen, and biodiesel, and the challenges and opportunities associated with their production and use.

Bio-energy
This module introduces cell and molecular biology and looks at examples of biotechnology in health care and agriculture. You will learn about the use of cell and molecular biology in the design and development of biotechnological processes and their applications in industry.

Bio-Processing of Disease
This module introduces the fundamental concepts of tissue and cell biology and looks at the ethical, social, and legal issues associated with tissue engineering.

Tissue Engineering approaches to failures in living systems
Delivering the Department of Biomedical Sciences. This module introduces cell and molecular biology and looks at examples of bioengineering in the design and development of tissue engineering. You will learn about the fundamental concepts of tissue engineering and their applications in industry.

Bio-energy
This module provides an overview of the political, social, and environmental implications of bioenergy, including the technologies and policies that are used in the production and use of biofuels.

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Our City
 Sheffield is England’s fourth largest city. It is located roughly in the middle of England, on the edge of the Peak District National Park, about 230 hours by train from London. The atmosphere is laid back, friendly. The city is compact and easy to get to know.

It’s nice to know that although Sheffield is a major city and developing all the time, it has kept its sense of community. To this day, the centre of the city is still a 30-minute walk from the university accommodation.

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Accommodation
 There’s a great choice of accommodation so you will have the experience of living in a student city and really be able to see what student life is all about. Our student housing is within easy walking distance of campus and close to a frequent bus service. If you decide University accommodation is not for you, the Accommodation Office can still help you.

We can help you find private accommodation that’s right for you for details see www.sheffield.ac.uk/housing.

Our University
 Founded in 1905, we have grown in reputation and size to become a premier-league, research-led institution with almost 24,000 students including over 3,000 international students from 150 countries.

Voted number one for student experience
 Times Higher Education Student Experience Survey 2014-2015

99

The Sunday Times

“Big businesses love Sheffield. Its students are snapped up on graduation and its facilities are used by companies wanting to push back the frontiers of knowledge.”

England’s greenest city
150 woodlands and 50 public parks.

One of the UK’s safest cities
Government statistics.

Minutes away from Peak District National Park.

The people are friendly, and the nightlife is vibrant.

Only 2hrs by train to London.

It’s central location makes the city an ideal base for travel.
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