Chemical and Process Engineering
Undergraduate Degrees 2018
CONTENTS

03 School of Chemical and Process Engineering
04 Learning and teaching
06 Careers and employability
08 Chemical Engineering (MEng, BEng)
09 Chemical and Energy Engineering (MEng, BEng)
10 Chemical and Materials Engineering (MEng, BEng)
11 Chemical and Nuclear Engineering (MEng, BEng)
12 Modules
13 Petroleum Engineering (MEng, BEng)
14 Entry requirements and how to apply

95% OF OUR RECENT GRADUATES HAVE SECURED EMPLOYMENT OR GONE ON TO FURTHER STUDY WITHIN SIX MONTHS OF GRADUATING (DLHE)

Information provided by the University such as in presentations, University brochures and the University website, is accurate at the time of first disclosure. However, courses, University services and content of publications remain subject to change. Changes may be necessary to comply with the requirements of accrediting bodies or to keep courses contemporary through updating practices or areas of study. Circumstances may arise outside the reasonable control of the University, leading to required changes. Such circumstances include, industrial action, unexpected student numbers, significant staff illness (where a course is reliant upon a person’s expertise), unexpected lack of funding, severe weather, fire, civil disorder, political unrest, government restrictions and serious concern with regard to the transmission of serious illness making a course unsafe to deliver. After a student has taken up a place with the University, the University will look to give early notification of any changes and try to minimise their impact, offering suitable alternative arrangements or forms of compensation where it believes there is a fair case to do so. Offers of a place to study at the University will provide up to date information on courses. The latest key information on courses, entry requirements and fees can be found at www.leeds.ac.uk/courses. Please check this website before making any decisions.
Globally renowned for our teaching and research, the School of Chemical and Process Engineering has an established reputation across the entire spectrum of chemical, energy, petroleum and nuclear engineering.

Chemical and process engineers help to manage natural resources, protect the environment, control health and safety procedures and recycle materials, while developing and managing the processes which make the vast range of products we use and take for granted in everyday life.

Chemical engineering is all about changing raw materials by altering the chemical, biochemical or physical state of a substance to create everything from face creams to fuels, metals to paper, plastics to synthetic fibres. These products are in every shop, office and home, and many of the companies that manufacture them are household names.

Our chemical engineering degree courses are internationally accredited by the Institution of Chemical Engineers (IChemE). Accreditation is vital if you want to become a chartered engineer after graduation.”

Dr Colin Poole, Senior Lecturer

OUR REPUTATION
We’re ranked top 10 in the UK for Chemical Engineering by the Complete University Guide 2018, and top 100 in the QS World University Rankings by Subject 2017. Our active research environment enables us to offer a range of exciting courses taught by experts who are leaders in their fields.

In recognition of our strong and continued commitment to gender equality, we have received a prestigious Athena SWAN Silver Award.

This is awarded by the Equality Challenge Unit, the national body that promotes equality in the higher education sector.

OUR DEGREES:
- CHEMICAL ENGINEERING
- CHEMICAL AND ENERGY ENGINEERING
- CHEMICAL AND MATERIALS ENGINEERING
- CHEMICAL AND NUCLEAR ENGINEERING
- PETROLEUM ENGINEERING

To view all undergraduate degrees offered by the Faculty of Engineering visit:
engineering.leeds.ac.uk
Our research feeds directly into our teaching and you will be taught by academics in an environment where knowledge is created. Through our research and the funding it attracts, we are able to invest in world-class facilities and staff who will enthuse and inspire you.

You will benefit from our integrated style of learning and teaching. The courses are modular and structured around lectures, tutorials, seminars, laboratory and practical work, as well as individual and group projects where you can gain hands-on experience of investigating and applying material from your lectures and tutorials in a real-world context.

**INDUSTRY-RELEVANT COURSES**
Our engagement with industry is one of the main reasons our graduates are so highly valued. The School has an active Industrial Advisory Committee, which helps ensure our courses are up to date with the modern practices and techniques that will enable you to succeed in industry upon graduation.

Our staff work with numerous companies on a variety of research and consultancy projects. We also organise industrial visits to sites such as Drax Power Station, Corus Steel, Sellafield, Ineos Chemicals and the Wytch Farm Oilfield, to name just a few. This means that you will have direct contact with industry and potential employers from an early stage in your course.

**FLEXIBLE DEGREES**
Our chemical engineering degrees share a common first two years. This means you have the freedom to switch courses up until the end of your second year.

If you are sure from the start that you only want to study for three years, for example if you are an international student, it is also possible to apply for the BEng version of our courses. The BEng is identical to the first three years of the MEng course and has the same entry requirements.

**INTEGRATED MASTERS (MEng, BEng)**
All our courses are Integrated Masters (MEng, BEng) degrees, meaning they provide you with great breadth and depth of study.

If you study for four years, you can graduate with an MEng – the preferred engineering qualification, which fulfils the academic requirements en route to Chartered Engineer status. This course offers you the opportunity to work on a wider range of projects with a high level of industrial involvement. Should you wish to graduate early, you may decide at any point until the middle of the third year to graduate after three years with a BEng.

If you study for four years, you can graduate with an MEng – the preferred engineering qualification, which fulfils the academic requirements en route to Chartered Engineer status. This course offers you the opportunity to work on a wider range of projects with a high level of industrial involvement. Should you wish to graduate early, you may decide at any point until the middle of the third year to graduate after three years with a BEng.

You also have the option of extending your studies by taking an industrial placement year or studying abroad. Visit our ‘Careers and employability’ section on page 06 to find out more about these options.

**HANDS-ON LEARNING**
The individual and group project work you’ll carry out throughout your course will take you one step closer to becoming a confident and self-motivated graduate.

As well as focusing on technical and problem-solving abilities, project work also allows you to develop professional skills to facilitate successful participation in design and research activities, including teamwork and effective communication skills.

**YEAR ONE**
You’ll participate in an introductory group project, which will form part of your coursework. This project is concerned with the design of processing plants – a major aspect of all process-based engineering – and you’ll gain your first experience of the design process.
YEAR TWO
In your second year you’ll work on a project, which is a simplified version of an industrial process that you may meet in a real-life situation as a chemical engineer.

You’ll learn to balance a chemical process, which usually includes a recycle and a purge, and then calculate the energy balance across it. After designing a heat exchanger, you’ll calculate the pressure drops across and the piping to help you specify a pump and its motor. The project will give you experience of working in a team and help you to develop your communication and time-management skills.

YEAR THREE
As a third-year undergraduate, you’ll work in a group to design a chemical process plant or other industrial operations. Each project is supervised by a member of academic staff who you’ll meet with on a weekly basis. You’ll also attend a series of lectures and seminars dealing with relevant aspects of the planning, design and evaluation of the project, as well as ethical issues.

YEAR FOUR (MEng)
In your fourth year, you’ll carry out an individual research project under the guidance of an academic supervisor. The project will enable you to develop your research ability, a key skill needed in industry.

The topics of the projects provided vary greatly and are associated with current engineering problems in chemical and process engineering. Through the project, by the methods of experiment or computational simulation, you’ll gain an understanding in the area and develop the scientific understanding and engineering technology for the specific problem.

STUDENT SUPPORT
Our personal tutorial system will provide you with academic and pastoral support. You will have a designated personal tutor throughout your studies. You will have weekly academic tutorials with your tutor throughout your first year in your tutor group (of typically five students), as well as one-to-one meetings twice per semester.

In addition, our excellent Student Support team is based close to where you’ll work and study to help with anything from academic advice to timetabling and project submission enquiries.

The web-based student portal will enable you to access the University’s student services and information, while our Virtual Learning Environment (VLE) will allow you access to your personal timetables, course materials, academic and social groups, and much more.

Recent research projects include:
• Extraction of silver from thiosulphate liquors
• Flocculation and aggregate structure of clay particulates
• Crystallisation of sodium sulphate
• Heat transfer in jacketed agitated reactors
• Applications of nanotechnology in enhanced oil recovery.
Careers and employability

A degree from the University of Leeds and the wider experience you’ll gain while you’re studying here will help you stand out from the crowd and secure that all-important graduate job in an increasingly competitive job market.

REWARDING CAREERS

Over 95% of our recent graduates have successfully secured employment or gone on to further study within six months of graduating (latest Destinations of Leavers from Higher Education (DLHE) survey).

Recent graduates have gone on to further study or have successfully secured positions in chemical and pharmaceutical companies, fossil fuel and renewable energy plants, mineral processing and metals operations. They also work in areas such as the utilities, consulting, environmental, health and safety, various government agencies, banking and finance.

According to a salary survey undertaken by the Institution of Chemical Engineers (IChemE) in 2014, the average starting salary for a chemical engineer in the UK was in the region of £29,500.

STRONG INDUSTRIAL LINKS

We have close links with some of the top graduate recruiters in the industry, including BP, Shell, Procter & Gamble, Unilever, Dow Chemicals, BRE and Arup. Our links with the chemical, energy and petroleum industries mean that our courses are industry oriented, with up-to-date material relevant to your future career. Our graduates are consequently highly sought after by employers. We organise additional seminars delivered by practising engineers and other professionals, meaning that you have direct contact with industry and potential employers from the start.

CAREERS SUPPORT

Throughout your time with us, our award-winning faculty Employability team is here to support, guide and advise you. In addition to specialist face-to-face meetings, you’ll benefit from:

- timetabled employability sessions
- ongoing support to find internships and placements
- presentations and workshops delivered by employers.

Our Employability team also organises an annual STEM Careers Fair, which will give you the opportunity to meet over 100 graduate recruiters to gain an insight into graduate jobs and to explore placement and internship opportunities.

INDUSTRIAL PLACEMENT YEAR

An industrial placement year is a great way to help you decide what kind of career you might like when you graduate. As well as giving you the opportunity to develop your own skills, you’ll gain a real insight into working life in a particular company or sector.

All our degrees allow you to undertake a placement year alongside your degree (either in the third year of the BEng or the third or fourth year of the MEng).

If you decide to undertake a placement year, this will extend your degree by 12 months. On successfully completing your placement year, you will be awarded the ‘industrial’ variant in your degree title to demonstrate your unique expertise to future employers.

STUDY ABROAD

You have the opportunity to apply to spend time abroad, usually as an extra academic year. The University has partnerships with more than 400 universities worldwide and popular destinations for our students include Europe, the USA, Canada, Australia, New Zealand, Singapore, Hong Kong, South Africa and Latin America.

Visit our website to find out more about these and other opportunities.

engineering.leeds.ac.uk/chemical/employability
I was delighted when I was successful in my application for an internship at Procter & Gamble. The role I applied for was supply network operations, something I was fairly unaware of before I began my placement. On a day-to-day basis, I manage projects that ensure P&G maintains impeccable supply of its products to UK retailers. I have thoroughly enjoyed my placement because of the type of work I’ve been doing and the people I have been working with. Looking forward, I am hoping to be successful enough in my placement to be offered a full-time role with the company.”

LEWIS DZYGRYNUK
MEng, BEng Chemical Engineering (Industrial) Industrial placement year at Procter & Gamble

Our students can currently be found on placement at companies including:
- Astra Zeneca
- Atkins
- BASF
- Mars
- Glaxosmithkline
- Invista
- L’Oréal
- Rolls-Royce
- P&G
- Sellafield Ltd
- Total
- Unilever
Chemical Engineering
(MEng, BEng)

Chemical engineering is all about changing raw materials by altering the chemical, biochemical or physical state of a substance to create everything from face creams to fuels, metals to paper, plastics to synthetic fibres and drugs. This course will expose you to the fundamental science and mathematics underpinning process engineering concepts, alongside specialised modules to equip you for a career in the chemical and related process industries.

In years one and two you'll cover topics such as mass and energy balances, thermodynamics, fluid mechanics, materials science and process modelling, as well as having plenty of opportunities to put that knowledge into practice in design and laboratory work.

In year three, you’ll build on this knowledge and study more specialised modules, covering a wide range of chemical engineering topics such as separation processes, reaction engineering, particle process engineering, process control and a major design project.

If you continue into year four for the MEng qualification, you’ll carry out an individual research project that investigates an industry-related topic in depth. Masters-level modules informed by research interests across the School will allow you to develop sophisticated knowledge of topics such as product design and development, modelling and simulation, advances in chemical engineering and advanced reaction engineering.

If you wish to study a specialism as part of your degree, we offer the following alternatives:

• Chemical and Energy Engineering (MEng, BEng)
• Chemical and Materials Engineering (MEng, BEng)
• Chemical and Nuclear Engineering (MEng, BEng)

In these courses, the third and fourth years cover degree-related subjects and projects, as well as core chemical engineering topics. The first two years of all four courses are common, so you can transfer to one of the others at the end of the second year if you wish.

These courses are accredited by the Institution of Chemical Engineers (IChemE) so that you can eventually apply for Chartered Engineer (CEng) status. The MEng version meets all the educational requirements for registration as a UK chartered engineer (CEng). Graduates of the BEng schemes can achieve this with additional study.

RANKED A TOP 100 UNIVERSITY FOR
CHEMICAL ENGINEERING IN THE QS WORLD
UNIVERSITY RANKINGS BY SUBJECT 2017

REWARDING CAREERS
Careers in the field of chemical and process engineering are wide ranging and employment prospects are excellent.
Recent graduates have secured positions including:
• Graduate Engineering Technician, ABB
• Nuclear Process Engineer, Amec
• Graduate Process Engineer, Babcock International
• Technical Support Engineer, Baker Hughes
• Engineering Graduate, BOC
• Drilling Engineer, BP
• Graduate Project Engineer, Centrica
• Chemical Engineer, ExxonMobil
• Energetics Scientist, Qinetiq
• Graduate Engineer, Reckitt Benckiser Products
• Drilling Engineer, Saudi Aramco
• Nuclear Process Engineer, Sellafield Ltd
• Oil and Gas Production Technologist, Shell
• Process Project Engineering, Unilever.
The energy needs of the world’s population keep growing, with most of it coming from fossil fuels that generate carbon dioxide, which ultimately results in climate change. Fossil fuels need to be burnt more efficiently and cleanly while, at the same time, renewable and sustainable sources of energy must be developed. This course will equip you with the skills needed to work in the chemical, energy and related industries. You’ll learn about fundamental science and mathematical concepts such as process modelling, thermodynamics and materials science, but you’ll also gain specialised knowledge and skills in topics like combustion processes and renewable energy technologies.

Every stage of the course gives you plenty of opportunity to apply your knowledge to project-based work, equipping you with the professional skills to succeed in your future career.

As with the core Chemical Engineering course, in years one and two you will be exposed to the fundamental science underpinning a wide range of engineering principles.

In year three, you’ll take part in a group design project concentrating on the design of a materials processing plant, supported by modules that will help develop your specialist knowledge. You’ll learn about structural materials and functional and nanomaterials, as well as core topics like separation processes.

If you continue into year four for the MEng qualification, you’ll take Masters-level modules informed by the research interests of staff in the School. These will give you sophisticated knowledge of topics like materials selection and failure analysis, industrial polymer engineering and product design. You’ll also conduct an individual research project on a materials-related topic.

Throughout my three-year undergraduate degree, I have been exposed to the fundamental science and mathematics underpinning a wide range of process and energy engineering concepts thorough lectures, practicals and projects. Modules like renewable technologies, combustion theory, health, safety and environment developed my interest and provided me with strong insight into chemical engineering, renewable systems and environmental sustainability.

The projects and practicals I have done so far put into my perspective the relevance of future energy systems and its fundamentals to encounter problems in global warming and energy shortage.

Support is always available from teaching staff who are there to answer your questions. There are also employability seminars that run throughout the entire year, various societies and a wide range of volunteering opportunities available.

The skills I have gained a wide range of through my course will aid me in my future career. These include communications skills, time management, teamwork health and safety awareness and software skills, including Aspen Hysys and Matlab.

MARYAM AL ABDULLATIF
MEng Chemical and Energy Engineering
Chemical and Materials Engineering
(MEng, BEng)

Developing new processes for producing specialist materials, such as plastics, lightweight metal alloys and nanomaterials, is an emerging trend in the chemical industry for a wide variety of industrial and consumer applications. Covering all these areas, this degree is designed to provide you with the knowledge and skills for a career in the chemical, materials and related industries.

You’ll gain a good grounding in the fundamental science and mathematical concepts that underpin chemical engineering, such as thermodynamics and the principles of process engineering. Specialised modules will also give you a thorough understanding of materials-related topics like structural materials and nanomaterials.

Each year of the course gives you the chance to take part in project work, equipping you with the range of professional skills you’ll need in your future career.

As with the core Chemical Engineering course, in years one and two you will be exposed to the fundamental science underpinning a wide range of engineering principles.

In year three, you’ll take part in a group design project concentrating on the design of a materials processing plant, supported by modules that will help develop your specialist knowledge. You’ll learn about structural materials and nanomaterials, as well as core topics like separation processes.

If you continue into year four for the MEng qualification, you’ll take Masters-level modules informed by the research interests of staff in the School. These will give you sophisticated knowledge of topics like materials selection and failure analysis, industrial polymer engineering and product design. You’ll also conduct an individual research project on a materials-related topic.

REWARDING CAREERS
Our graduates have successfully secured positions as process engineers, drilling engineers, engineering technicians and chemical engineers, among many other areas. They work in chemical and pharmaceutical companies, fossil fuel and renewable energy plants, mineral processing and metals recycling operations. They also work in areas such as the utilities, consulting, environmental, health and safety, other government agencies and banking and finance.

“...The course is extremely interesting and challenging. I enjoy the many forms of learning and teaching, which can range from using computer programs such as CAD and CrystalMaker to the group design projects and research work. I also enjoy how diverse the course is in terms of the people studying with me, giving me the chance to work on my intercultural skills as well as giving me potential travel destinations.

After I graduate I would like to do some research in the form of a PhD in fields such as biomaterials or nanotechnology. Eventually I hope to work in a management position for a big multicultural company!”

KIMBERLEY MARIE PAVIER
MEng Chemical and Materials Engineering
Chemical and Nuclear Engineering (MEng, BEng)

Nuclear power is a major component of the energy supply mix of many industrialised nations. Concerns over climate change have prompted a major resurgence of interest in nuclear power in the UK and elsewhere, meaning that the current shortage of skilled engineers capable of designing, building, operating and decommissioning such facilities is likely to grow in the future.

To help meet this demand, this course will give you specialist knowledge in various aspects of nuclear energy, so that after graduation you can expect to pursue an exciting and highly rewarding career in the industry. You’ll also gain a broad knowledge of key topics across the field of chemical engineering, such as thermodynamics and materials science, to complement your specialist skills.

As with the core Chemical Engineering course, in years one and two you will be exposed to the fundamental science underpinning a wide range of engineering principles.

Year three gives you the opportunity to build on this foundation. You’ll develop a more advanced knowledge of key chemical engineering topics such as reaction engineering and separation processes, alongside a specialised module in nuclear science and engineering, from the principles of fission to reactor decommissioning and the treatment of nuclear waste.

If you continue to year four for the MEng qualification, you’ll take Masters-level modules informed by the research interests of staff in the School. You’ll develop skills in designing new chemical products and manufacturing challenges and study reaction engineering in greater depth. At the same time, you’ll deepen your understanding of the context of nuclear engineering and the directions it may take in the future.

REWARDING CAREERS

Recent graduates have successfully secured positions in top UK nuclear companies, which include chemical and pharmaceutical companies, fossil fuel and renewable energy plants, mineral processing and metals operations. Many of our graduates have developed their careers by undertaking PhD projects. They also work in areas such as the utilities, consulting, environmental, health and safety, other government agencies and banking and finance.

Recent graduates have secured positions including:
- Graduate Nuclear Process Engineer, AMEC
- Graduate Nuclear Process Engineer, National Nuclear Laboratory
- Graduate Trainee, Nucleargraduates
- Graduate Nuclear Process Engineer, Sellafield Ltd
- Systems Engineer, Sellafield Ltd
- Graduate Process Engineer, Babcock International.

Charlotte Ransom
MEng Chemical and Nuclear Engineering

“The laboratory work we’ve done across the three years has been the most enjoyable part of my studies. It’s nice to have hands-on experience related to the concepts taught in lectures, and carrying out experiments and writing up the lab reports really helps to consolidate what you’ve been taught.

Each year we’ve undertaken at least one chemical and nuclear-related project. This year, for the BEng design project, a small group of us designed part of a nuclear fuel reprocessing plant. It was a really challenging project as there were so many different things to consider but it was a chance to draw together all the basic concepts we had learned in the first two years of the course.”

Charlotte Ransom
MEng Chemical and Nuclear Engineering
These are typical modules/components studied and may change from time to time. The first two years of our four chemical engineering degree courses are common, which means that it is easy to change your programme choice if you wish. For full module descriptions please visit our website.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
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<tbody>
<tr>
<td><strong>Compulsory modules:</strong></td>
<td><strong>Optional modules:</strong></td>
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<tr>
<td>• Technical Skills and Applications</td>
<td>• Mathematical Techniques 2</td>
</tr>
<tr>
<td>• Introduction to Process Engineering</td>
<td>• Engineering Science 2</td>
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<tr>
<td>• Engineering Science 1</td>
<td>• Safety, Health and Environment</td>
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<tr>
<td>• Mathematical Techniques 1</td>
<td>• Process Systems and Applications</td>
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<tr>
<td>• Materials Science and Engineering</td>
<td>• Process Modelling and Thermodynamics</td>
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<tr>
<td>• Optional module</td>
<td>• Materials Synthesis and Characterisation</td>
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<th>Year 3</th>
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<tr>
<td><strong>Chemical Engineering</strong></td>
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<td>• Design Project (BEng)</td>
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<td>• Process Engineering Operations</td>
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<td>• Separation Processes</td>
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<tr>
<td>• Reaction Engineering</td>
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<tr>
<td>• Process Optimisation and Control</td>
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<tr>
<td><strong>Chemical and Energy Engineering</strong></td>
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<tr>
<td>• Design Project (BEng)</td>
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<tr>
<td>• Separation Processes</td>
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<tr>
<td>• Reaction Engineering</td>
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<tr>
<td>• Combustion Theory and Design</td>
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<td>• Renewable Technologies</td>
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<th>Year 3</th>
<th>Year 4 (MEng)</th>
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<tr>
<td><strong>Chemical and Materials Engineering</strong></td>
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<td>• Design Project (BEng)</td>
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<td>• Separation Processes</td>
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<td>• Reaction Engineering</td>
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<td>• Structural Materials</td>
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<tr>
<td>• Functional and Nano-Materials</td>
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<tr>
<td><strong>Chemical and Nuclear Engineering</strong></td>
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<tr>
<td>• Design Project (BEng)</td>
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<td>• Separation Processes</td>
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<td>• Reaction Engineering</td>
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<td>• Nuclear Operations</td>
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<td>• Nuclear Fundamentals</td>
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<th>Year 4 (MEng)</th>
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<tr>
<td><strong>Chemical Engineering</strong></td>
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<tr>
<td>• Research Project (MEng)</td>
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<tr>
<td>• Chemical Products Design and Development</td>
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<tr>
<td>• Multi-Scale Modelling and Simulation</td>
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<tr>
<td>• Advanced Reaction Engineering</td>
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<tr>
<td>• Advances in Chemical Engineering</td>
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<tr>
<td><strong>Chemical and Energy Engineering</strong></td>
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<tr>
<td>• Research Project</td>
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<tr>
<td>• Chemical Product Design and Development</td>
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<tr>
<td>• Advanced Engines and Turbines</td>
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<td>• Advanced Reaction Engineering</td>
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<tr>
<td>• Fuel Processing</td>
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<td>• Advanced Renewable Technologies</td>
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<tbody>
<tr>
<td>• Research Project (MEng)</td>
<td>• Research Project (MEng)</td>
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<tr>
<td>• Chemical Products Design and Development</td>
<td>• Chemical Products Design and Development</td>
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<tr>
<td>• Advanced Reaction Engineering</td>
<td>• Advanced Reaction Engineering</td>
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<tr>
<td>• Materials Selection and Failure Analysis</td>
<td>• Nuclear Engineering and the Nuclear Industry</td>
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<tr>
<td>• Nanomaterials</td>
<td>• Nuclear Futures</td>
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<td>• Extractive Metallurgy</td>
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Global economic growth creates rising demand for oil and gas. Petroleum engineers play a vital role in the industry by finding, extracting and processing oil and gas, but there is currently a major shortage of engineers qualified in this area.

Designed in collaboration with a number of companies, this degree will equip you to meet this need. You’ll study the basic mathematical, scientific and geological concepts that underpin petroleum engineering alongside specialised modules on topics like geophysics, drilling technology and unconventional oil and gas reservoirs.

The course is taught by the School of Chemical and Process Engineering, and the School of Earth and Environment, meaning you’ll be taught by experts in a variety of fields with extensive industrial experience.

The first two years of the course will give you a good grounding in the fundamental science and mathematics behind key engineering and geological concepts. You’ll learn the basics of geophysics, the mechanisms that create sedimentary basins and reservoir simulation techniques, as well as core topics like process modelling and thermodynamics.

The first three years of the course will give you a good grounding in the fundamental science and mathematics behind key engineering and geological concepts. You’ll learn the basics of geophysics, the mechanisms that create sedimentary basins and reservoir simulation techniques, as well as core topics like process modelling and thermodynamics.

Year three gives you the chance to build on this knowledge with a set of specialised modules on topics such as drilling and production technology and interpreting seismic activity. You’ll also explore wider strategic issues in the energy industries, such as climate change, environmental policy and the debate around shale gas extraction. The major team project will give you the chance to design an oil or gas reservoir or a production or processing facility.

If you continue to year four for the MEng qualification, you’ll study Masters-level modules informed by the research of staff in both Schools. The topics you’ll study include unconventional oil and gas reservoirs, refinery chemistry and advanced drilling and production technology. You’ll also apply what you’ve learned to an individual research project on a topic relevant to the petroleum industry.

REWARDING CAREERS
Demand for hydrocarbon production is growing as the global economy grows, and the oil and gas sector is truly international. As a result, you can look forward to a variety of exciting career prospects.

Typical areas include petroleum geology, oil and gas exploration, reservoir modelling, drilling and production, refinery operations, product marketing, operational management, equipment manufacture and supply, consultancy and regulatory authorities.

Recent graduate destinations include:
- Production Engineer, Saudi Aramco
- Field Engineer, Schlumberger
- Graduate Oil and Gas Production Technologist, Shell.

These are typical modules/components studied and may change from time to time.
## Entry requirements and how to apply

<table>
<thead>
<tr>
<th>Degree title</th>
<th>UCAS code</th>
<th>Duration (years)</th>
<th>A-level</th>
<th>BTEC</th>
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<tbody>
<tr>
<td>MEng, BEng Chemical Engineering</td>
<td>H800</td>
<td>3/4</td>
<td>A*AA, including Mathematics and either Physics or Chemistry. Excludes General Studies or Critical Thinking.</td>
<td>D<em>D</em>D with distinctions in relevant mathematics and chemistry or physics units. Some mathematics and chemistry or physics units may be optional on your BTEC but are required by the Faculty. Please contact us for further information.</td>
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<td>AAA, including Mathematics and Physics or Chemistry. Excludes General Studies or Critical Thinking.</td>
<td>D*DD with distinctions in relevant mathematics and chemistry or physics units. Some mathematics and chemistry or physics units may be optional on your BTEC but are required by the Faculty. Please contact us for further information.</td>
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**ACCESS TO LEEDS**
The University of Leeds has a policy of welcoming applicants from non-traditional academic backgrounds. If you do not meet our entry criteria above, you may be eligible via the Access to Leeds scheme.
www.leeds.ac.uk/a2l

**FOUNDATION COURSES**
If you do not have the formal qualifications for immediate entry to one of our degrees, you may be able to progress through a foundation year.

The University offers a one-year BSc Studies in Science designed to prepare students without a science background at A-level for study on one of our degrees in engineering.

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* Where an A-level science subject is taken, we require a pass in the practical science element, alongside the achievement of the A-level at the stated grade.

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---

IF YOU CHOOSE TO UNDERTAKE A PLACEMENT OR STUDY ABROAD OPTION THIS WILL EXTEND YOUR STUDIES BY 12 MONTHS
We also offer an interdisciplinary Science Foundation Year for applicants who meet specific widening participation criteria.

www.ltc.leeds.ac.uk

INTERNATIONAL FOUNDATION YEAR IN ENGINEERING
Our International Foundation Year (IFY) is intended for international students who do not yet have the formal qualifications required for entry to level 1 of our degree courses.

internationalfoundationyear.leeds.ac.uk

LANGUAGE CENTRE
Our Language Centre provides the Academic English for Undergraduate Studies pre-sessional course, which is designed to help international students develop the necessary language and academic study skills for undergraduate study.

www.leeds.ac.uk/languages

HOW TO APPLY
All undergraduate applications should be made through the Universities and Colleges Admissions Service (UCAS). Full instructions on how to apply are available at

www.ucas.com

OFFER PROCESS
Suitable applicants will be invited to an applicant day, for which we strongly encourage attendance, as this gives you the opportunity to meet our students, academic and admissions staff, and find out more about your course. You’ll take part in a practical engineering activity, followed by a School and campus tour. The tour of the School’s facilities includes interactive demonstrations of student activities.

A discussion with an academic will normally form part of this process. This will give you the chance to talk about your application in more detail, check that it’s the right course for you and your career plans, have your questions answered and find out more about studying at Leeds.

SCHOLARSHIPS
We offer a number of scholarships within the School. Please visit our website for further details.

engineering.leeds.ac.uk/scholarships

CONTACT US
If you require any further information prior to making a formal application, please contact our Undergraduate Admissions team.

School of Chemical and Process Engineering
University of Leeds
Leeds LS2 9JT, UK
tel: +44 (0)113 343 6542
e-mail: ugchemical@leeds.ac.uk

FIND US ONLINE
To find out more about the University and the School of Chemical and Process Engineering visit:

engineering.leeds.ac.uk/chemical

facultyofengineeringleeds
@LeedsUniEng
@engineeringleeds
engineeringleeds
leedsuniengineering
YOU WILL HAVE ACCESS TO TWO FLIGHT SIMULATORS INCLUDING AN AIRBUS A320 AND A COMPLEX TWIN-ENGINE FNPT2 AIRCRAFT, WHICH IS FULLY CERTIFIED FOR COMMERCIAL PILOT INSTRUMENT TRAINING
Aviation Technology

As the demand for flights continues to grow, there will always be a need for appropriately qualified and skilled aviation professionals, whether in the air or in operational and management roles. If you want to embark on an exciting career in the aviation industry, our aviation technology degree courses are for you.

At Leeds, our world-class research feeds directly into our teaching, which means that our aviation courses are directly aligned to the industry’s needs. You will have the opportunity to learn to fly and progress towards a Private Pilots Licence (PPL). You will also receive commercial pilot ground instruction, enabling you to accelerate your career progression.

We have close links with some of the top graduate recruiters in the industry and our aviation graduates are highly sought after by employers. Our strong industrial links mean that your course is industry oriented, so material is up to date and relevant to your future career as an aviation professional.

In recognition of our strong and continued commitment to gender equality, we have received a prestigious Athena SWAN Silver Award.

This is awarded by the Equality Challenge Unit, the national body that promotes equality in the higher education sector.

"Studying aviation at Leeds gave me the knowledge and confidence to make credible and successful applications to the industry and be selected to train to become an airline pilot as soon as I graduated. My academic background in aviation is still an advantage for me today as first officer at British Airways."

ADAM HOWEY
BSc Aviation Technology with Pilot Studies

OUR DEGREES:

AVIATION TECHNOLOGY AND MANAGEMENT
AVIATION TECHNOLOGY WITH PILOT STUDIES

To view all undergraduate degrees offered by the Faculty of Engineering visit:
engineering.leeds.ac.uk
Learning and teaching

You’ll be taught by academics who are leaders in their field – staff have conducted research for organisations such as NASA, the US Federal Aviation Administration, Boeing, Lockheed Martin and the US Air Force. Our research leads directly into our teaching, meaning you’ll hear about the very latest developments in your studies.

You’ll benefit from our integrated style of teaching and learning, using methods such as lab classes, project work, lectures, tutorials, example classes and group activities, allowing you to gain first-hand experience of applying your knowledge to real-life situations. Together they will equip you with in-depth knowledge and key practical skills that will put you in a good position to compete in science and technology-related careers.

INDUSTRY-RELEVANT COURSES
You will benefit from specialist input into the curriculum through the involvement of professional pilots and other professionals from the aviation industry. Our strong industrial links mean that your course is industry oriented, so material is up to date and relevant to your future career as an aviation professional.

Our student-led Aviation Society organises a range of industrial visits and invites external speakers to give presentations. Flight training schools and other airline and airport professionals regularly give careers talks. This means you will have direct contact with industry and potential employers from an early stage in your course. Our alumni also organise events to assist students with their preparation for a career in aviation.

FLIGHT TRAINING
Many of our students are seeking to enter the pilot profession after completing their degree. Our BSc Aviation Technology with Pilot Studies supports these aspirations through a combination of flight training at private pilot level and ground instruction at commercial level. Our BSc Aviation Technology and Management students are also given the opportunity to undertake private pilot flight training.

PRIVATE PILOT TRAINING
We incorporate ten hours of private pilot flight training, which is during the summer that follows year one, into course fees*. This includes:

- aircraft hire
- flight instructor fees
- ground transport between the Leeds campus and the training location
- flying club membership fee.

Private Pilots Licence (PPL) theory and ground examinations are included during year one. Students considered ready to fly solo will need to provide a valid UK Civil Aviation Authority (CAA) class 2 medical certificate to complete training, and we will be pleased to facilitate them taking the necessary medical examination if they have not already done so on entry to the programme. Flight training is provided by a flying school at an airfield near to Leeds.

COMMERICAL PILOT GROUND INSTRUCTION
So that you can progress along the path to a pilot career, we incorporate commercial pilot ground instruction into year two of the BSc Aviation Technology with Pilot Studies, including:

- high-quality instruction by a suitably CAA-accredited ground instructor
- access to study materials needed for the ATPL ground school if required.

You will also have access to a flight simulator suitable for commercial pilot instrument training at no additional cost.

Please note that the CAA Air Transport Pilot Licence (ATPL) ground examinations are for an external qualification beyond the control of the University of Leeds. Students wishing to sit these examinations are responsible for any CAA mandated revision short course and examination fees and must have completed their PPL.

PROJECTS
Project work provides you with an excellent opportunity to explore a subject further and will enable you to develop essential skills such as problem-solving, communication skills and teamwork, all vital to success in your chosen aviation career. Teamworking is an essential aspect of personal development for your future career in the aviation industry and its importance is reflected in the team project you will carry out in your final year.

* upon the successful first-time pass of 100 credits at level one.

engineering.leeds.ac.uk/aviation
FACILITIES
You’ll have access to our engine laboratories and flight simulators, including an Airbus A320 airliner cockpit simulator. If you want to take commercial-level instrument training, you’ll also benefit from the use of our CAA-approved complex twin-engine FNPTII aircraft simulator. You will also enjoy excellent teaching facilities and resources, including modern, well-equipped lecture theatres and laboratories.

STUDENT SUPPORT
Our personal tutorial system will provide academic and pastoral support. You will have a designated member of staff as personal tutor throughout your studies at Leeds. You will have weekly academic tutorials with your tutor throughout your first year, in your tutor group (of typically five students), as well as one-to-one meetings twice per semester.

We have an excellent Student Support team, located close to where you will work and study, who will help you with anything, from academic advice and guidance, online module enrolment and registration, timetabling, results and progression requirements to coursework/project submission enquiries and what to do if you miss work through illness.

The web-based student portal will enable you to access the University's student services and information, while our Virtual Learning Environment (VLE) will allow you access to your personal timetables, course materials, academic and social groups, and much more.
Your degree from the University of Leeds and the wider experience you’ll gain while you’re studying here will help you stand out from the crowd and secure that all-important graduate job. Both degrees will equip you with the skills you need to succeed in industry, including design, problem-solving, numeracy and analytical skills, together with transferable skills such as communication and working as a team.

REWARDING CAREERS
Many of our students see these courses as being the first step towards gaining a Commercial Pilot Licence (CPL). In addition to these options, airports, airlines and the broader aviation industry offer many other opportunities and you will be well placed to launch your career in a variety of aviation-related areas such as airport operations and management, air traffic control, non-airline commercial flight operations, flying instruction, and roles in technical sales and marketing. Some students have been successful in obtaining RAF sponsorship.

Many of our graduates are working as first officers for a range of airlines and we would expect them to progress to captain in due course.

Graduate salaries are dependent on the size of the airline. A newly qualified pilot employed with a small regional airline would earn around £24,000. A first officer working for one of the larger airlines can earn between £38,000 and £48,000, and a senior captain at a major airline will typically receive a very high salary.

Graduates progress towards their CPLs in various ways, including studying at commercial flight training schools in the UK and abroad.

CAREERS SUPPORT
Throughout your time with us, our award-winning faculty Employability team is here to support, guide and advise you. In addition to specialist face-to-face meetings, you’ll benefit from:
- timetabled employability sessions
- ongoing support to find internships and placements
- presentations and workshops delivered by employers.

Our Employability team also organises an annual STEM Careers Fair, which will give you the opportunity to meet over 100 graduate recruiters to gain an insight into graduate jobs and to explore work experience and internship opportunities.

Just a few of the employers that have recently attended our fairs include:
- Airbus
- British Airways
- The Manchester Airports Group
- Jet2.com
- The Royal Air Force (RAF).

INDUSTRIAL PLACEMENT YEAR
An industrial placement year is a great way to help you decide what kind of career you might like when you graduate. As well as giving you the opportunity to develop your own skills, you’ll gain a real insight into working life in a particular company or sector.

You will be given the opportunity to undertake a placement year alongside your degree, between the second and third year of your studies.

If you decide to undertake a placement year, this will extend your degree by 12 months. On successfully completing your placement year, you will be awarded the ‘industrial’ variant in your degree title to demonstrate your unique expertise to future employers.
If you would like to develop specialist aviation engineering, technical and management skills but do not wish to take the commercial pilot ground training component, our BSc Aviation Technology and Management is the perfect choice. This course is also suitable for those who already hold an ATPL and wish to acquire broader knowledge of the air transport industry.

This degree course will equip you with the skills required for a career in management and operations in the aviation industry, and will enhance your employability and credentials. You will also have the opportunity to undertake flight training at private pilot level. In your second year, you will take modules on aviation management and will study how to manage and finance activities in the aviation industry.

You will benefit from specialist input throughout the course through the involvement of professional pilots and senior managers from the aviation industry. Bringing working knowledge of advanced communications and navigation systems, management techniques and strategic thinking, these contributions complement the knowledge base provided by the course.

HANDS-ON LEARNING
Every year of the course gives you hands-on experience of project work. Recent examples of projects our students have been working on include:
• Airport design: thinking outside the box
• Environmental impact assessment for airlines
• Security aspects of baggage handling; reduction of security-related threats to aircraft
• Analysis of key performance indicators in airside operations.

GRADUATE DESTINATIONS
Recent graduates have secured positions including:
• Link Manager, Air Canada, Heathrow
• Flight Planner, Teesside Airport
• Aircraft Broker, Air Charter Service, Dubai
• Operations Controller, Eastern Airways
• Air Traffic Controller, Eurocontrol
• Aircraft Propulsion Engineer, Rolls-Royce North America
• Air Traffic Controller, RAF
• Project Manager, QinetiQ.

FURTHER STUDY
• Air traffic control course, Australia
• Commercial pilot training, CTC Training, New Zealand
• JAA ATPL integrated course, Oxford Aviation Training.
Drawing on our extensive expertise in aircraft design, materials, propulsion, environmental issues and industrial management, this course will equip you with a solid science and engineering base and the broader aviation knowledge vital for pilots in the 21st century.

You'll benefit from the training facilities and expertise of a professional flying school as you undertake ten hours of flight training, achieve the Civil Aviation Authority (CAA) ground exam requirements for the Private Pilots Licence (PPL) and develop the knowledge you need for commercial pilot ground exams. At the same time, you’ll gain a strong science and engineering base with modules on topics like aviation engineering materials. You’ll also put this knowledge into the context of the aviation industry today and in the future.

You will benefit from specialist input throughout the course through the involvement of professional pilots and senior managers from the aviation industry. Bringing working knowledge of advanced communications and navigation systems, management techniques and strategic thinking, these contributions complement the knowledge base provided by the course.

HANDS-ON LEARNING
Every year of the course gives you hands-on experience of project work. Recent examples of projects our students have been working on include:

• Aircraft control in turbulence
• Aircraft cabin reconfiguration
• Air traffic control problems
• Design and construction of aircraft landing systems
• Design, construction and operation of a small unmanned aerial vehicle
• Development of a remote piloting system using the flight simulator
• The cockpit — a total rethink
• Novel on-board surveillance systems for in-flight security
• Design of a hypersonic business jet
• Design and scale-model testing of an air ambulance for the 21st century.

GRADUATE DESTINATIONS
Recent graduates have secured positions including:

• First Officer, British Airways, flying B757/767, based at Heathrow
• First Officer, Easyjet, flying A320, based at Luton
• Flight Dispatcher, Gatwick International Airport
• Aeronautical Analyst, Navtech
• First Officer, Qatar Airlines, flying A340, based in Doha
• Weapons Systems Officer, RAF
• First Officer, Ryanair, flying B737, based at Stansted
• Senior First Officer and Pilot Technical Instructor, Thomas Cook, flying A320, based at East Midlands.
### Modules

Our courses are broadly common and focus on core aviation knowledge, transferable aviation skills and creative aviation industry problem-solving. Teamwork is an essential aspect of personal development for your future career in the aviation industry and its importance is reflected in the team project you will carry out in your final year. For full module descriptions, please visit our website.

#### Aviation Technology and Management (BSc)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Compulsory modules:</th>
<th>Optional modules:</th>
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<tbody>
<tr>
<td></td>
<td>• Technical Skills and Applications</td>
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<td>• Introduction to Surface and Air Transport</td>
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<tr>
<td></td>
<td>• Mathematical Techniques 1</td>
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<td>Year 2</td>
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<td></td>
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<td>• Aircraft 1</td>
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<td>• Aviation Project Management and Finance</td>
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<td>• Aircraft 2</td>
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<td>• Aviation Safety and Reliability</td>
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#### Aviation Technology with Pilot Studies (BSc)

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<td>• Advanced Pilot Theory</td>
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These are the typical modules studied and may change from time to time.
## Entry requirements and how to apply

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<tr>
<th>Degree title</th>
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<th>BTEC</th>
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<tr>
<td>BSc Aviation Technology and Management</td>
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<td>H460</td>
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**IF YOU CHOOSE TO**

**UNDERTAKE A PLACEMENT**

**YEAR THIS WILL EXTEND YOUR STUDIES BY**

**12 MONTHS**

engineering.leeds.ac.uk/aviation
AVIATION TECHNOLOGY

UNDERGRADUATE DEGREES

WE OFFER A NUMBER OF SCHOLARSHIPS WITHIN THE SCHOOL. PLEASE VISIT OUR WEBSITE FOR FURTHER DETAILS.

www.leeds.ac.uk/scholarships

CONTACT US

IF YOU REQUIRE ANY FURTHER INFORMATION PRIOR TO MAKING A FORMAL APPLICATION, PLEASE CONTACT OUR UNDERGRADUATE ADMISSIONS TEAM.

School of Chemical and Process Engineering
University of Leeds
Leeds LS2 9JT, UK
Tel: +44 (0)113 343 6542
Email: ugaviation@leeds.ac.uk

FIND US ONLINE

TO FIND OUT MORE ABOUT THE UNIVERSITY AND AVIATION TECHNOLOGY VISIT:

engineering.leeds.ac.uk/aviation

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@engineeringleeds
engineering.leeds
leedsuniengineering