Engineering

Undergraduate Degrees 2022
Design, innovate, create

Engineers help build the future, extend scientific progress, and improve global economies. The mission of Lancaster’s Engineering Department is to develop forward-thinking innovators who are able to overcome challenging problems using teamwork, originality, and a rigorous scientific acumen.

The expertise of our academic staff expands across a broad range of fields, reflecting the interdisciplinary nature of the challenges modern engineers face. Our relatively small size and collegiate campus give our department a friendly atmosphere that helps to foster a community spirit and positive interactions between staff and students. Our flexible degrees mean you can change specialisation, opt for an industrial placement and transfer between BEng and MEng pathways. During later years you can select optional modules and project work linked to and informed by our excellence in research.

Studying engineering involves cultivating a range of skills through theory and practice. We adopt a “learning-through-doing” approach, supported by our exceptional team of experienced technicians and support staff. This approach constitutes you solving real-world problems, addressing technical and broader challenges, all of which enhance your employability.

Degrees

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I am delighted to invite you to discover the exciting learning experience we offer in our Engineering Department.

You will join a vibrant engineering community and be immersed in a lively, exciting environment where teaching and research are performed together in unison. We recognise the difficult time you may have had recently with disruption to education, life and schooling. Our broad based engineering and associated range of entry qualifications means that our programmes are designed to support your transition from many educational backgrounds and ensure a smooth transition from school to the advanced studies you will complete at university.

We have an excellent tutorial system and the recent accreditation visit commended the availability of our highly qualified academics and experienced staff to students. Lancaster has continued to teach throughout the pandemic making use of the latest technologies such as virtual machines to use professional simulators remotely and online teaching when in person sessions have not been possible. We have ensured our students receive an engaging academic year, no modules have been dropped or discontinued during the pandemic and practical laboratory sessions were delivered when allowed, in the safest environment. Engineers will continue to play a pivotal role in the future of our society and I look forward to meeting you, to show you our unique learning environment and discuss your plan for a brilliant future in engineering.
The course for you

At Lancaster we take great pride in the engineering education we deliver. We equip you with not only the specialist knowledge and skills in your chosen engineering discipline but also in general engineering principles through our common first year. This will enable you to go on to prosper in interdisciplinary work settings, rapidly adding value to your employer’s business immediately after graduation.

Engineering involves a lot more than just theory, and at Lancaster we adhere to the principles of CDIO™ (Conceive Design Implement Operate), giving you increasingly open ended real-world engineering problems to solve. Here you get frequent opportunities to apply your design capabilities, analytical skills and engineering knowledge in contextualised settings to ensure economic, ethical, safe and sustainable solutions. Final year projects sometimes involve external organisations and often have genuine positive impacts on local businesses and society through the devices and systems that are developed.

All academic staff are research active, meaning that specialist engineering modules are delivered by experts within their field. As a department we always seek to provide forward-thinking course content through engaging with engineering businesses, the professional engineering institutions (such as IET, IMechE and IChemE) and by responding to student feedback and comments.

Your typical first year

11 hours of lectures*
6 hours of lab and project work
4 hours of maths workshops
1 hour of small group tutorials
19-22 hours of weekly contact* + Private study

Our undergraduate degrees start with a common first year regardless of which discipline you choose. This provides flexibility for you to change specialism and reflect the interdisciplinary nature of modern engineering.

Lectures
Lectures consist of a presentation delivered by experts who will outline the subject material and stimulate your learning. The prime purpose of a lecture is to impart knowledge and to develop your understanding of a subject, so it is important to extract the content and the message from the information presented. All lectures are recorded and available for you to revisit at your own pace.

Tutorials
Engineering and mathematics modules are backed up by a scheme of weekly tutorial workshops in small groups of students with a member of academic staff as a tutor. For engineering tutorials there will be question sheets and exercises for you to complete as well as the opportunity to discuss the wider context of the work, ethics, careers and any other material important to your development as individual learners and professional engineers. Maths workshops are designed to help you apply your mathematical skills to reinforce material covered in lectures.

Laboratory work and projects
In your first year you will spend two afternoons per week in the laboratory developing your practical skills.

Independent learning
Approximately 50% of your time should be spent on independent learning. This includes reading and understanding notes from lectures, further reading, completion of coursework and practical work linked to modules and tutorials, and preparation for exams.

Assessment
The assessment process varies across modules, but includes laboratory reports, project reports, presentations, online progress tests, tutorial sessions and exams. Assessment is continuous rather than just at the end of the degree and is appropriate to the learning outcomes assessed. This means we are able to provide feedback to you throughout your degree.

* At the time of going to print, hybrid teaching is planned with a number of face to face sessions to support online lecture material.
Milola Ogundairo (Grizedale College)
is studying in her third year of MEng Hons Mechatronic Engineering

What made you choose Lancaster University?
One of the reasons I chose Lancaster was because I noticed how high Lancaster was in the league tables. I also went to The Student Room (which is a website where students talk about university life) and Lancaster had really good reviews. So then I came for the Interview Day, and I liked the look of the campus, and the current students I talked to also gave really positive feedback about Lancaster.

Has studying at Lancaster met your expectations?
I think, honestly, it’s surpassed my expectations! When I was looking at the Engineering page on the website I saw it had loads of contact hours and I really wasn’t looking forward to that. It’s not as bad as I thought it would be! The lecturers are really nice and students in the second and third year help you if you have questions. If I have questions or if I don’t understand something during the lectures I can go to the lecturer after the session and talk about it later.

What is it like studying engineering?
I won’t say it’s easy but it’s fun! I know we have more lectures than other courses do but we have less reading, so we learn through lecturers explaining concepts, which I think is better than if you had to study it all on your own.

What is your favourite part of studying engineering?
I like the practicals when I know what I’m doing! Being taught something in the lectures, understanding it, and doing it in real life is pretty amazing.

Have there been any specific practicals which you particularly enjoyed?
In one of our first year design modules, we were tasked with designing a robot that could climb up a pipe. It was fun because we were put in groups and everyone got to throw their ideas in and we were able to design something really cool.

What is the atmosphere like in classes?
It’s a friendly environment where I feel like I can ask questions. And I ask a lot of questions! The labs are obviously louder and more lively than lectures because in lectures you have to listen to what tutors have to say. I feel like each lecturer has been able to explain concepts properly. In the labs, there is usually more than one instructor, so there’s enough help to go around if a lot of people are having trouble.

What challenges have you faced since moving to Lancaster?
In university you need to be more independent and learn how to study on your own because no one’s going to hold your hand the whole way. That change is probably what’s most challenging.

Do you do anything interesting outside of your studies?
Lancaster has many options for extra curricular activities. Even through the pandemic, societies still met online. I tried parkour in my first year and wanted to start dodgeball before Covid hit. I’ve also been to the Engineering Society socials which is a great way to meet people around the department.

Why is Lancaster the place for you?
I think the campus itself is really nice. I love the way the campus looks. I had a friend from another university come over and she was really impressed with the library. I also like how there are so many different societies and options for you to choose from. And like I said before, I like how friendly the lecturers are.
Preparing for industry

All MEng students participate in industrial projects during their third and fourth years. These are real-life company problems which you will tackle in a small, often interdisciplinary, group. Solutions are not out of a textbook and provide a great opportunity for you to apply all your skills.

Our excellent industry links allow us to source challenging and constructive projects, which are mutually beneficial to the companies and students involved.

All MEng programmes contain a major group project, providing an opportunity for you to tackle a challenging engineering problem over the course of a year. The projects are regularly commended by external examiners, accreditation panels and members of industry.

Katharine, Connor, Benedict, Tom and Robert are currently in the final stages of their group project.

Describe the project you are currently working on.

Our job at the moment is to try and conduct a full design review of a mountain rescue stretcher. The current mountain rescue stretcher has been around for at least forty years. It weighs an absolute tonne so it needs redesigning to make it lighter! We’re also trying to improve its functionality, so rather than just adding a wheel, we are adding various things you can use in different mountain rescue situations.

This project followed on from one that Tom did last year - he made a wheel for a stretcher and our supervisor thought it would be worth doing a fourth year project on it so we have picked it up and carried on.

How have you applied what you have learnt throughout your degree in this project?

The compulsory modules this year involved how to approach a project, how to work as a group, and how to apply formal processes to projects. This was really useful because we were able to apply what we learnt throughout this year in our project.

Your previous studies are subjective, based on what your previous projects were throughout the degree. This means we all come into a project with different specialisms.

We’ve also been able to choose modules this year - Katharine was just studying materials, so she’s probably going to write the materials section of the written report. Because of this choice, there is the potential to diversify our skills and apply them to the project.

Katharine Field, MEng Hons Mechanical Engineering Pendle College

Connor Lynch, MEng Hons Mechanical Engineering (Study Abroad) Furness College

Benedict Scorey, MEng Hons Mechanical Engineering Bowland College

Tom Hoyle, MEng Hons Mechanical Engineering Cartmel College

Robert Atkinson, MEng Hons Mechanical Engineering Pendle College

Does your project involve theoretical and practical work?

This project has involved going from initial ideas to designing the stretcher on computers, to then getting it made, then testing it - it’s been a complete process, which has been really good to see.

How different is working on a team project compared to working on solo projects?

It’s very different. I think when we start our careers, a really valuable skill will be teamwork. Obviously, you can learn a lot of theory about it, but the only way to actually learn about it is to do group work. The fourth year project is such a large piece of work, spreading over an entire year, and that means that people can’t slack off and we learn how to work collaboratively. Lots of challenges come from this, not so much from the technical side of things.

There’s also a bit more responsibility given to you in fourth year because we’re actually working with the mountain rescue team, and if our stretcher passes its test it could be used out in the field! Unlike previous years, there are fewer projects being worked on, so each project is bigger and much more impactful.

What support have you received from the Department throughout this project?

The technicians have all been great, they’ve all wanted to help. A lot of them have been excited about working on our project! We definitely wouldn’t have been able to do the project without the Department’s help.

We’ve also been able to employ external specialist services to assist with some manufacturing aspects such as welding titanium. Although our request to work with titanium was unusual, the Department supported our decision to work with this material.

What advice would you give to someone who is about to embark on a 4th year group project?

Because you are given a lot of responsibility and it’s a big project to do over the year, try not to get overwhelmed, and also just to remember that we are still at university. This experience is really good as it’s preparing us for future careers, but we don’t have to be too stressed about it… hopefully! That’s easier said than done.

Katherine, Robert, Connor, Benedict and Tom
Supporting your career aspirations

With a strong focus on industrial projects, internships and work experience, our degrees will provide you with the support you need to achieve your career aspirations. Our undergraduate degrees provide excellent employment prospects. We provide careers advice and host a number of events throughout the year, including a Science and Technology Annual Careers Fair.

Industrial experience

We actively encourage you to take time out of your degree to complete periods of time in industry, typically 12 to 15 months' paid employment. These industrial opportunities can be arranged in conjunction with the University, directly with companies or through the Engineering Development Trust's Year in Industry scheme. Our strong industry links with both large corporations and small local companies mean that we can assist you in finding a suitable and rewarding placement in a sector that interests you. As a student undertaking a placement, you'll typically receive a salary of around £15,000 p.a. with many students also receiving financial support from their company to assist subsequent years of study.

Jon Elmer
MEng Hons Mechatronic Engineering
Fylde College
Mechatronic Design Engineer
Science and Technology Facilities Council

I develop, design and commission precision motion systems for the instrument suite at the ISIS Neutron and Muon Source near Oxford. At Lancaster, I enjoyed the campus' community atmosphere, and the balance between campus and city life. The teaching staff and technicians in the Engineering Department were all very approachable and helpful. I also enjoyed the different societies and sports teams, especially playing for the University water polo team. The dedicated Engineering Building is a great asset, and even though it only opened in my first year I have never complained. I was able to work as a summer student within the Engineering Department, which strengthened my skills and gave me a broad range of project experience, which I have applied during my early career.

Sophy Ellis
BEng Hons Mechanical Engineering
County College
Project Manager
Jaguar Land Rover

I currently work at Jaguar Land Rover as a Project Manager overseeing ADAS (Automated Driver Assisted System) in their vehicles. ADAS is like a baby system building towards fully autonomous driving. We deliver set features such as Lane Keep Assist (which gently steers vehicles back to the lane) and Cruise Control with Speed Limiter that enables customers to be safer when driving.

Although I don't do a typical engineering role at the moment, technical project management does require a lot of engineering acumen. My job also requires lots of soft skills. It's making sure people are talking to one another when they need to (which is actually really hard!), knowing who people are, and making those connections.

My job's really varied, intense and sometimes very hard. I would have never got my job without the degree I did at Lancaster University. Thinking about my degree from Lancaster, the most important skill I developed was learning to take things back to first principles. When you have a really complicated problem, being able to strip it back to its raw components is so important.

Completing the degree was really challenging but I learnt so much. Obviously, with engineering, it's a very intense course. I had lots of reading, and I had to be on campus a lot. But because it's intense and difficult, you come out of university and people want to employ you!

Elish Chambers
BEng Hons Chemical Engineering
Bowland College
Company: GlaxoSmithKline
Role: Oral Technical Support Technologist
Duration: 1 year

I am currently on an Industrial Placement year at GlaxoSmithKline between my second and third year of BEng Chemical Engineering. I wanted to do a Placement Year to see what engineering looks like in the real world and help me narrow down my future career path. I was drawn to the pharmaceutical industry as the knowledge that there is a patient at the end of the supply chain brings a sense of purpose and motivation to my work.

My year in industry started a bit differently thanks to COVID-19, with my role as an Oral Technical Support Technologist starting exclusively working-from-home whilst I completed a lot of mandatory training. Fortunately, once all trained up, I moved to be based on-site at our secondary manufacturing site in Worthing. In my role I support the day-to-day production of Augmentin Tablets and Suspensions, as well as leading projects which aim to continuously improve and optimise our processes. Outside of work, I’ve been involved in local STEM outreach projects and am working towards my EngTech registration with IChemE.

The world of work is very different to University life and the 6am wakeups definitely took some getting used to! My year in industry has helped me establish myself as a young professional and develop a network of contacts within an industry I’m passionate about. I have strengthened my communication and presentation skills, as well as improved my technical understanding of key engineering concepts, such as powder flow and unit operations.

My Year in Industry has been an incredible learning experience so far and has renewed my love of Chemical Engineering! In the long run, I hope my experience this year will make me more employable in the tough graduate market and act as a stepping stone into the pharmaceutical industry.

Our alumni

Our graduates are keenly sought after by employers in a range of industries, ranging from small local businesses to large international corporations. Our graduates find that developing their skills through project work and engaging with a close-knit student community helps prepare them for exciting industrial careers after leaving Lancaster.
Our research

We are active in a wide range of research areas and teaching on our degrees is directly informed by our world-leading research. Research in the Department is structured into five research areas.

Electronic Engineering
World leading academics in high frequency electronics, flexible electronics, photonics, and sensing. We are leading cutting edge research form microwaves to terahertz, vacuum electronics, particle accelerators, wireless communications for 5G and 6G, microfluidic and novel artificial functional materials.

Energy
Lancaster Energy Engineering Group research includes the supply and demand of energy, work on hydropower and fluid machinery, wave, tidal, solar, wind, energy storage, bioenergy utilisation, combustion and fuels, condition monitoring, smart grids, and energy efficiency.

Structures, Materials & Manufacturing
Multidisciplinary and addressing a broad range of societal and engineering problems, including smart sensors for structural integrity, composite materials, component design and optimisation, additive manufacturing and laser-based production techniques and multiscale modelling of materials and production processes.

Nuclear Science & Engineering
Lancaster hosts one of the UK’s strongest university-based nuclear research centres with internationally recognised capabilities in nuclear safety and policy, radiation detection and safeguards, control and robotics, fusion, decommissioning and waste management, nuclear process chemistry, and environmental behaviour.

Chemical Engineering
The Chemical Engineering Group researches all the relevant aspects of chemical and biochemical engineering, including electrochemical energy storage, functional porous materials, photoelectrochemical sensors and chemical kinetics for renewable and alternative fuels.

Entry requirements

A level
BEng ABB
MEng AAA

Required subjects
A level Mathematics and a physical science, for example, Physics, Chemistry, Electronics, Computer Science, Design & Technology or Further Mathematics.

International Baccalaureate
BEng 32 points overall
MEng 36 points overall

With 16 points from the best 3 Higher Level (HL) subjects including either:
Mathematics HL grade 6 (either pathway) plus grade 6 in a physical science
Mathematics HL grade 6 (either pathway) plus grade 6 in two SL physical sciences
Mathematics SL grade 7 (Analysis and Approaches) plus HL grade 6 in a physical science

Acceptable physical science subjects include Physics, Chemistry, Computer Science, and Design Technology

BTEC (2016 specifications)
BEng Distinction, Distinction, Merit in an Engineering related subject to include Distinctions in the following units – Unit 1 Engineering Principles, Unit 7 Calculus to Solve Engineering Problems. Unit 8 Further Engineering Mathematics is highly recommended.
MEng Distinction, Distinction, Distinction in an Engineering related subject to include Distinctions in the following units – Unit 1 Engineering Principles, Unit 3 Engineering Product Design and Manufacture, Unit 6 Microcontroller Systems for Engineers, Unit 7 Calculus to Solve Engineering Problems. Unit 8 Further Engineering Mathematics is highly recommended.

*For Chemical Engineering a BTEC is considered alongside A Level Chemistry*

Additional requirements
GCSE Minimum of four GCSEs at grade B or 6 to include Mathematics, and GCSE English Language at grade C or 4.
IELTS 6.5 overall with at least 5.5 in each component. For other English language qualifications we accept, please see our English language requirements web pages.

We welcome applications from students with a range of alternative UK and international qualifications, including combinations of qualifications. Further guidance on admission to the University, including other qualifications that we accept, frequently asked questions and information on applying, can be found on our general admissions web pages.
Our department is one of only a handful of general engineering departments in the country offering an interdisciplinary experience typical of what you will face in modern industry. Our courses are designed to be flexible and adapt to your study needs. For example, BEng students who achieve 60% or higher can transfer onto the MEng schemes.

Students on any of our courses are able to take part in a year in industry. This would provide you with valuable real-world experience and allow you to practise and enhance the skills you have gained during the programme.

All our degrees are externally accredited*, offering a mark of assurance that the degree programme meets the standards defined and set out by the Engineering Council. Our three year BEng degrees meet partial fulfilment of the educational requirements for Chartered Engineer (CEng) status, whereas our four year MEng degrees meet the full educational requirements.

General Engineering
BEng – H100 3 years
MEng – H102 4 years

If you're unsure of which area of specialisation you'd like to go into when applying, you can use the UCAS codes H100/H102: Engineering to leave your options open. Similarly, subject to meeting progression requirements, the common first year lets you change your specialisation allowing a more informed choice at the end of year one.

At our recent joint accreditation by the Institute of Mechanical Engineers (IMechE) and the Institution of Engineering Technology (IET) the commendable features were -
* The multi-disciplinary aspects of all of the programmes.
* The strong design thread that runs through the programmes exemplified by the emphasis on CDIO
* Continual investment by the university in the facilities of the Engineering Department

Chemical Engineering
BEng H800 3 years
MEng H811 4 years

Chemical engineers are employed across a huge variety of sectors requiring technical knowledge of chemistry, biochemistry, engineering, materials science and IT as well as skills in management, safety and the environment. Our modern Chemical Engineering programmes offer a common first year structure delivering fundamental engineering science and engineering mathematics to give you a sound base on which to develop your specialism.

In year two onwards, you will gain hands-on experience with access to cutting-edge facilities and an array of high-quality equipment in our state-of-the-art Engineering Building and acquire creative, entrepreneurial and analytical skills which will improve your employability.

Studying Chemical Engineering provides you the opportunity to study process technology, which will help solve some of the world’s greatest challenges; such as clean water and equitable access to energy. You will gain insights into current environmental issues and development of new technological solutions such as carbon capture for climate change and biochemical processes for sustainable production.

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

For MEng students we offer a diverse range of individual project opportunities that are guided by our research strengths. Previous projects have examined fuel cells, nutraceuticals, catalysis, bioprocesses and materials.

#8 for Chemical Engineering graduate prospects
(The Complete University Guide 2022)

“A degree in Chemical Engineering at Lancaster opens career pathways by teaching processes that are directly used in those careers and develops important skills like teamwork ability.”

Eleanor Hodgson
MEng Chemical Engineering
Electronic and Electrical Engineering

BEng – H607 3 years
MEng – H606 4 years

We live in an increasingly high-tech world where demand for electronic and electrical engineers is crucial to the design and manufacture of future systems in the medical, environmental, energy, transport, communications markets.

Our Electronic and Electrical Engineering degree will develop your specialist knowledge whilst reflecting the modern industry requirement to work collaboratively alongside other engineering disciplines. Your first year develops core engineering science, mathematics and software technical skills along with equally valuable transferable skills highly valued by employers.

Specialisation begins in year two where you will build on your knowledge in analogue and digital systems and complete an interdisciplinary mobile robot project allowing you to engage with creativity and develop a range of specialist practical and professional expertise.

During year three, you will have the opportunity to study an individual project under one-to-one tuition and guidance from our academic staff who are leading experts in the areas of electronics design, radio frequency and wireless technologies, sensors and instrumentation, nanotechnology and renewable energy. Past projects include managing the UK’s contribution to the Large Hadron Collider upgrade at CERN; developing the electronics for the survey of polar ice melting; and leading the development of very high data rate transmission over 5G mobile networks.

MEng students in fourth year will build upon the BEng degree by studying a higher level of technical understanding using cutting-edge technology as well as cultivating your leadership, entrepreneurial and management potential. This is achieved by engaging with two short industry linked projects.

Our Electronic and Electrical Engineering programmes are accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council. Lancaster is a University Partner within the UK Electronics Skills Foundation who connect the most capable electronics engineers is crucial to the design and manufacture of future systems in the medical, environmental, energy, transport, communications markets.

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MEng students in fourth year will build upon the BEng degree by studying a higher level of technical understanding using cutting-edge technology as well as cultivating your leadership, entrepreneurial and management potential. This is achieved by engaging with two short industry linked projects.

Our Electronic and Electrical Engineering programmes are accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council. Lancaster is a University Partner within the UK Electronics Skills Foundation who connect the most capable electronics students at top UK universities with leading employers through a competitive scholarship scheme.

“I initially applied to General Engineering, then after the first year found that I really enjoyed the electronics modules so was able to move onto the Electronic and Electrical Engineering course.”

Laura Gould
MEng Hons Electronic and Electrical Engineering
Cartmel College

#1 for Electronic and Electrical Engineering for research intensity
(The Complete University Guide 2022)

Mechanical Engineering

BEng H300 3 years
MEng H303 4 years

Mechanical Engineering is a field covering any industry that uses mechanical systems, from construction to transport; medicine to manufacturing; renewable energy to consumer technology.

Our programmes start with a general first year where you will study a broad spectrum of engineering science. From the second year onwards, you will specialise in the core competences required for a modern mechanical engineer (for example, design and manufacturing, mechanics and materials, thermodynamics and fluid mechanics, innovation and management). Group projects are a strong feature of the second year and you will enhance your team working and presentation skills in a multi-disciplinary robot project and a Dragon’s Den inspired business development project which is supported/mentored by industry experts.

Individual project work plays a significant role in the development of your analytical ability and practical skills in year three. It also enhances your creativity for solving problems and producing innovative designs, key skills required by employers. Past projects have included high lift aerodynamics for turbine blade design, microstructural design of steels for improving strength and toughness, design and testing of a novel concept in thermal management for electric vehicles and vibration energy harvest using piezoelectric sensors.

Our MEng programme builds upon the three year BEng scheme offering opportunities for you to develop your leadership, entrepreneurial and management potential through design, make and test group project work and two short industry-linked projects. These projects offer the pinnacle of achievement whilst at university and have been commended by external examiners and industry. Our fourth year offers a diverse course structure that allows you to develop a deeper technical understanding in areas of your choice through a number of optional pathways –

• Advanced Manufacturing
• Energy and Resources
• Design

Our Mechanical Engineering programmes are accredited by the Institution of Mechanical Engineers (IMechE) on behalf of the Engineering Council.

“Studying Mechanical Engineering is an incredibly rewarding experience. From being introduced to lab procedure on day one, to conducting my own individual research project it has been a great journey. The department has given me the opportunity to grow and explore the engineering world, whilst always being there to support, guide, and advise me through my journey. With the combination of the technical expertise of lecturers and the practical know-how of the technical support staff, the department helps us to progress and develop into well-rounded engineers with the technical, practical, and professional skills to help us in our future careers.”

Samuel Noller
MEng Mechanical Engineering
Fylde College

#3 for Mechanical Engineering graduate prospects
(The Complete University Guide 2022)
Our Mechatronics degree programme was the first of its kind in the UK, set up in 1984 in response to employers’ needs. More than thirty five years later, we continue to lead the field. Mechatronic engineering is the combination of mechanical, electronic and computer engineering.

Your course takes a multidisciplinary approach and focuses on product design and systems integration using embedded microcontrollers, computers and actuators. You will learn to master the software that drives this technology and use your new skills on individual and group projects such as equipping mobile robots with satellite navigation systems.

Upon graduating, you will be capable of applying new technologies, promoting advanced design and introducing new and more efficient production techniques or processes. The broad technical understanding and leadership skills gained within the MEng makes Mechatronic Engineering graduates particularly attractive to industrial employers.

If studying the MEng, you will complete a major group project and two short industry-linked projects. Examples of these include, investigation into overheating in a dimmer switch, new product design for a multi-purpose unit in the domestic kitchen market, development of a whole body sleep movement sensor, development of an acoustic sensor for field environments (offshore and onshore) and design for a sports breathing training product.

Our Mechatronic Engineering programmes are accredited by the Institution of Engineering and Technology (IET) and the Institution of Mechanical Engineers (IMechE) on behalf of the Engineering Council.

“Engineering at Lancaster provides us with a student-focused learning experience through a diverse curriculum that equips us with the necessary skills to become thriving professionals.”

Ahmed Negm  
MEng Hons Mechatronic  
Lonsdale College

State-of-the-art  
Engineering Building with  
specially designed workshops and laboratories

For more information visit www.lancaster.ac.uk/engineering

“Nuclear engineering at Lancaster prepares you for all forms of nuclear engineering, including but not limited to energy, instrumentation, and medicine. The course contains many nuclear-specific modules as well as a wide range of interdisciplinary content relevant to every aspect of engineering.”

Charlie Thorogood  
MEng Nuclear Engineering  
Bowland College

Nuclear Engineering
BEng H820 3 years  
MEng H821 4 years

Studying Nuclear Engineering at Lancaster will provide you with a detailed understanding of nuclear technology and its implementation in modern industry, enabling you to pursue a career in a wide range of exciting fields including energy generation, decommissioning, medicine and fusion.

You will first study a broad range of topics, covering the fundamentals of engineering and engineering mathematics subjects. You then study several nuclear specific modules including Decommissioning and Sustainability, Nuclear Medicine and Nuclear Instrumentation through to our new module on Nuclear Fusion Engineering. Throughout, you will develop practical skills, test and analyse your design ideas in the laboratory or through computer simulation using engineering IT tools.

Our four year scheme is guided by world-leading research in nuclear instrumentation, nuclear decommissioning, and fusion. Through our collaborations with the UK Atomic Energy Authority, Sellafield Ltd, Westinghouse Springfields Fuels Ltd and others, the Department is an international leader in nuclear engineering systems. Our strong links with these industrial partners nuance your learning and help you gain insight into nuclear industries.

Nuclear applications cover a broad range of sectors from healthcare and cancer treatment through to power generation, national security and decommissioning activities.

1:14  
high staff to student ratio

For more information visit www.lancaster.ac.uk/engineering
Broaden your academic horizons by spending your second year studying abroad at a partner university in Europe, North America or Australasia. Importantly, the year abroad at Lancaster is not an addition to your degree, but instead fully integrated into the standard timeframe of three years for a BEng or four years for MEng.

We will help you select the appropriate modules at your chosen overseas partner institution to cover similar content to the Lancaster programme and ensure that you have appropriate skills and prerequisites for your return to Lancaster in year three.

Many multi-national engineering companies recruit graduates with international awareness and a willingness to travel. If you want to kick-start your international career by having actual experiences abroad you can talk about then the Study Abroad route is something that you should strongly consider and it is open to all our engineering programmes regardless of selected specialisation.

If you don't want to spend an entire year abroad as part of your degree, we have other opportunities which run during the vacation periods, some of which are co-delivered by Lancaster’s overseas campuses and teaching partners.

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“I completed my Study Abroad year at Iowa State University. I really enjoyed my time abroad for many of the expected reasons; the travelling, meeting people and living in another country. Some of the discoveries I made, that I didn’t expect to make, made the best memories of my Study Abroad year. It massively opened my eyes to the uniqueness of people and that no matter how similar countries in the west might seem they are very different. I fully intend on going back!”

Kaymen Lewis-Johnson
BEng Hons Electronic and Electrical Engineering (Study Abroad)
Cartmel College

For more information visit www.lancaster.ac.uk/engineering
Module guide

YEAR 1

All our undergraduate degrees start with a common first year, regardless of which discipline you choose, where you’ll study the following modules:

Mechanics of Materials
Manufacturing Fundamentals
Electrical & Electronic Fundamentals
Fundamentals of Electronic Instrumentation
Programming Fundamentals
Fundamentals of Digital Electronics
Introduction to Thermodynamics
Heat Transfer
Design, Innovation & 3-D Thinking
Process Engineering Fundamentals
Fundamentals of Chemistry for Engineers
Engineering Mathematics I
Engineering Mathematics II
Engineering Mathematics III
Engineering Mathematics IV

YEAR 2

Engineering Analysis
Business Development Project
Fluid Mechanics
Thermodynamics
Engineering Mechanics
Materials & Design
Power Engineering
Engineer Project
Instrumentation & Control
Electrical Circuits & Power Systems
Digital Electronics
Electromagnetics & RF Engineering
Nuclear Engineering
Decommissioning & Sustainability
Chemical Engineering Thermodynamics
Reactors & Equipment
Particle Technology & Separation Processes
Mass Transfer
Engineering Design Project
Chemical Engineering Lab Projects

YEAR 3

Engineering Management
Design & Manufacturing
Vibration Analysis & Applications
Machine Elements
Engineering Materials
Inductive Project
Computational Fluid Dynamics
Engineering Composites
Power Electronics & Applications
Digital Signal Processing
Optoelectronics & Wireless Communications
Analogue Electronics
Integrated Circuit Engineering
Mechatronic Systems
Nuclear Medicine
Nuclear Instrumentation
Chemical Process Design Project
Advanced Process Transfers
Chemical Engineering Design & Risk Safety
Computer Applications in Process Engineering
Energy Conversion
Catalytic and Bio-React Engineering

YEAR 4

Industry Linked Group Project
Rapid Manufacturing
Advanced CAD/CAM
Mechanics & Dynamics
Design & Modeling of Systems
Group Project
Intelligent System Control
Advanced Materials
Renewable Energy
Interfacing & Integration
Microengineering
Electrical Power Systems Analysis & Modelling
Advanced Embedded Systems
High Frequency Electronics
Terahertz, Science & Technology
Advanced Reaction Engineering
Nuclear Fuels & Energy Conversion
Water Resources & Treatment Technologies
Wastewater Engineering Technology
Electrochemical Engineering
MEng Dissertation Project

Pathways
Mechanical Engineering: MP1 - Design MP2 - Energy & Resources MP3 - Materials & Manufacturing
Electronic & Electrical Engineering: EP1 - Electrical & Control EP2 - Electronics
0 - Optional

www.lancaster.ac.uk/engineering/undergraduate/courses - for more detailed information on the modules

* Modules listed are correct at the time of printing and are subject to change
Supporting
your studies

We pride ourselves on the wide range of services and support available to all our students.

Small group weekly tutorials
You will meet weekly with your academic tutor in a friendly atmosphere to reinforce what you have learnt in lectures, discuss the wider engineering context, and to provide a forum for professional and personal development.

Online learning
Our online learning environment, Moodle, provides information and resources to support your learning. Lecturers utilise Moodle in a variety of ways such as delivering learning materials, uploading lecture recordings, opening up virtual discussion spaces, and updating you on course-related information.

It is used extensively for both delivery of material and for coursework submission. All of this links with the iLancaster app so you have a personalised timetable and know exactly when important deadlines or announcements are made.

Learning development
There is a team of professionals to help develop your academic writing, critical thinking, exam technique and management of your studies. The University has a full time dedicated maths tutor who works closely with the Engineering Department to help provide extra support through workshops, tutorials, and one-to-one sessions.

Wellbeing and support
Lancaster has a range of specialist support services that work in partnership with the Department and your college to offer you the right support at the right time.

Many students have medical conditions or impairments that can impact upon university life. If you have a condition that is classified as a disability, the Disability Service can help put in place various forms of support.

Our Counselling and Mental Health Service can provide short-term support to help you to continue to engage in your studies if you experience emotional and/or mental health issues. We have a medical practice on campus, pre-school centre and multi-faith chaplaincy.

Careers
Our Department Careers Champion leads careers advice and hosts a number of events throughout the year, including a dedicated Science and Technology Careers Fair. You will have access to our excellent Careers Service, which provides an innovative service for students and graduate employers. We offer lifetime support, help and advice to all of our students.

We’re here for you!

There are lots of ways you can connect with us. Our Open Days in early summer will be held online and are designed to introduce you to Lancaster and our department. We are hoping to hold on-campus events later in the year subject to government advice. You can also connect with us through Unibuddy via the website.

To find out more visit www.lancaster.ac.uk/visitus for up to date information on all our events.

For more information about our degrees and the Department please visit www.lancaster.ac.uk/engineering

Offer Holder Events
If you are offered a place on an engineering degree, you will be invited to take part in an Offer Holder Event. Depending on the degree scheme you have applied for this may involve an interview. At this event you will have the opportunity to engage with current engineering students, meet academic staff members, find out more detailed information regarding the programme of study and ask any questions that you may have. These exciting days are designed to give you a taste of how it feels to live and study at Lancaster. These events are likely to be a hybrid of on campus and on-line events.

Get in touch
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