Loughborough University

NO.1 IN THE UK FOR OVERALL SATISFACTION IN MATERIALS TECHNOLOGY
NSS 2021

RANKED 2ND FOR MATERIALS AND MINERAL ENGINEERING
THE GUARDIAN UNIVERSITY GUIDE 2022

TOP 5 IN THE UK FOR MATERIALS TECHNOLOGY
THE TIMES AND SUNDAY TIMES GOOD UNIVERSITY GUIDE 2022

Materials

School of Aeronautical, Automotive, Chemical and Materials Engineering

Contents

Welcome

Materials is a discipline which influences every aspect of our lives, from the packaging that contains our breakfast cereals, to the cars, buses, trains and cycles that get us around, and the very fabric of the buildings that we work and live in.

Developments in new materials are helping to solve grand challenges, such as providing us with more abundant and cleaner energy and advanced bioactive coatings to provide better healthcare solutions.

Materials science and engineering has been a core strength at Loughborough for over 50 years and we are one of just a few dedicated Materials departments in the UK. Over this time, we have developed a significant reputation for innovation and quality with leading industrial partners, who have high regard for our students and graduates, their degrees and our research.

Throughout your time at Loughborough, you will be part of a thriving, friendly teaching and research community. Upon graduation, you'll be equipped with all the knowledge and skills which are in demand by both industry and academia. Our excellent graduate recruitment figures are testament to this.

The department is housed in a newly-refurbished building with an impressive polymer processing plant, laboratories, teaching spaces, as well as a suite of world-class materials characterisation equipment. During your studies, you may choose to undertake a year working in industry, which will provide you with the opportunity to gain vital paid-work experience in a professional environment boosting your graduate employability prospects.

Studying at Loughborough is an enriching and valuable experience that opens routes to many career possibilities. We aim to realise the potential of all our students, and to help you find your place in the busy, exciting and fulfilling world of engineering.

Professor Chris Rielly
Dean of the School of Aeronautical, Automotive, Chemical and Materials Engineering

Why study Materials at Loughborough?

Our fully accredited courses are proven and established within the field of Materials Science and Engineering, meeting the specific requirements of industry and relevant professional bodies.

By joining our department, you'll be a part of one of the highest-ranking universities for Materials Science and Engineering in the UK. You will be able to immerse yourself in a nurturing learning environment, where you will be supported by our academics to help you reach your full potential.

Our courses have a long track record of delivering high-quality, research-led education, which will take you to the cutting edge of materials science. The development of new and improved materials is at the very heart of a range of technologies and our courses will provide you with the opportunity to explore and deepen your understanding of the scientific, engineering and design aspects of materials, their structure, properties, processing, in-service behaviour and environmental impact.

We pride ourselves on making high-specification equipment available to our students, complemented by expert tuition and support. You'll also get the chance to spend a year of your degree developing real-world expertise in industry, all whilst earning a salary.

TOP 10 IN THE UK FOR MATERIALS TECHNOLOGY
THE COMPLETE UNIVERSITY GUIDE 2023

ALL COURSES ARE ACCREDITED BY IOM3
INSTITUTE OF MATERIALS, MINERALS AND MINING

Women in Engineering
In 1919, four female engineering students were admitted onto an entirely male dominated engineering programme at the then, Loughborough Technical College. 100 years on and Loughborough University continues to celebrate women in engineering – through our annual memorial lecture dedicated to Claudia Parsons, one of the original four students. The University is a strong advocate for women in Science, Technology, Engineering and Mathematics (STEM) – creating a professional network of female engineers, celebrating women in engineering and showcasing what can be achieved in the field to future engineers.

The Loughborough Women's Engineering Society (WES) offers support, networking and volunteering opportunities for all students. Many of our engineering departments have achieved Athena SWAN awards, recognising our commitment to advancing women's careers in engineering.

lboro.ac.uk/engineering/engineering-centenary

AWARDED 5* FOR INCLUSIVENESS
INTERNATIONAL QS STARS SCHEME 2020

Athena SWAN Bronze Award

Engineer your career

If you are looking for hands-on industry experience with some of the world's top companies, our department is the place for you.

All students are given the opportunity to undertake a year in industry. During your placement year, you will work towards one of three Diplomas: Diploma in Industrial Studies (DIS) or Diploma in Professional Studies (DPS), both of which count as an additional qualification to your degree, and some students may opt to complete a Diploma in International Studies (DIntS) for work completed outside the UK.

This year of practical work will contextualise your academic studies, allowing you to experience industry first hand, as well as developing your professional skills. It will give you a distinct advantage in the job market upon graduation.

You will be supported by dedicated staff in securing a placement that best suits your skills and professional aspirations.

During the placement year, your employer will nominate an industry specialist who will supervise you. You will also be visited by your University tutor at your place of work and will be required to write reports on your progress and experience.

The value of a placement year:

- **Improved career prospects.** A placement gives you real life experience that will help you stand out when applying for jobs. It can often lead to sponsorship during the final year of your course and a job offer upon graduation.
- **Salary.** Most placements are fully salaried, with average salaries from £15,000 to £20,000.
- **Professional skill development.** A placement year helps you develop your skills in time management, team working, presentation skills and project management that will be essential for your future career.
- **Put your knowledge to the test.** It is your chance to put your knowledge gained during your degree into practice within a professional environment and get a feel for your future role.

A selection of the companies providing recent placements include:

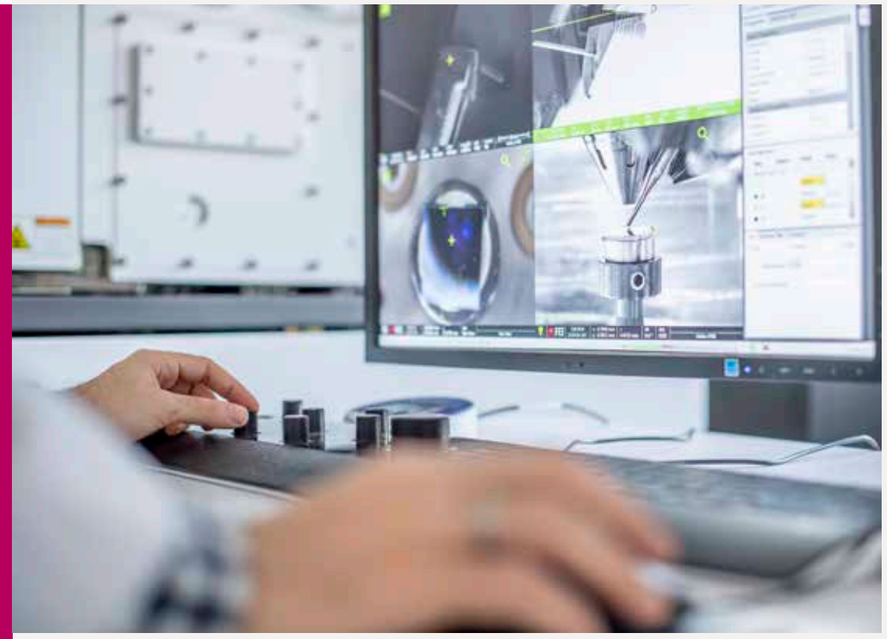
- Bentley
- Caterpillar
- Deloitte
- GlaxoSmithKline
- Heineken
- Innovia Films
- Jaguar Land Rover
- Johnson & Johnson
-
- Perkins Engines Company Ltd
- Sky
- Smiths Medical
- Virgin Media

lboro.ac.uk/materials

DEDICATED UNIVERSITY STAFF TO HELP YOU FIND A PLACEMENT

£17,500 AVERAGE PLACEMENT SALARY

ALL OUR UNDERGRADUATE COURSES OFFER A YEAR-LONG WORK PLACEMENT OR OVERSEAS STUDY OPTION



RANKED 5th IN THE UK FOR CAREER PROSPECTS

WHATUNI STUDENT CHOICE AWARDS 2022

Anastasia

Materials Engineering graduate

"Materials Engineering at Loughborough truly managed to explain a lot about how products are made and why they work. Significant engineering expertise came from the course and internship experiences. More importantly, however, the degree taught me not to fear difficult problems, diving straight into projects and working hard to achieve high standards. The group of academics and supervisors in the Department of Materials proved to be not only great scientists and engineers, but also fantastic life mentors and friends – I doubt many students at other institutions can say the same.

During my year-long placement at Airbus, I got to perform research into next-generation wing spar alloys, manage subcontracted work and travel abroad to improve supplier quality. The complexity of the aerospace sector made me very interested in global manufacturing and entrepreneurship, leading me to pursue a master's degree.

Now, I work at one of the world's leading management consultancies helping companies leverage their skills and optimise their manufacturing processes for better productivity. Loughborough taught me the importance of sustainability, helping others and our responsibility for making the world a better place. In 10 years, I hope to find myself working alongside fellow alumni, building initiatives towards using technology for good."

Inspiring graduates

Your time at Loughborough will form a launchpad from which you can build an exciting career. With so many opportunities available, you'll never be short of ways to improve your employability prospects.

Engineers have some of the top earning starting salaries due to the unique and specialist skill set. Chartered Engineers command even higher salaries and once you have reached this status you can expect to earn over £50,000 per year.

Our degree programmes provide you with a diverse skill set that include project management, communication, teamwork, leadership, critical thinking and analysis. These skills, combined with your specific, technical expertise, will set you up for a successful career.

The University holds its own engineering-specific careers fair. In recent years, this has had over 70 companies attending specifically to employ our students. This includes major consulting and contracting companies as well as more local and specialist firms.

Careers Network

Our award-winning Careers Network team is here to help and support you, offering everything from CV workshops, one-to-one advice sessions and mock interview practice sessions to delivering high-profile employer events. We've got everything you need for a successful future.

lboro.ac.uk/services/careers

£28,000 AVERAGE STARTING SALARY
*GRADUATE OUTCOMES SURVEY, 2019-20 GRADUATES**

TOP 5 IN THE UK FOR GRADUATE PROSPECTS
THE TIMES AND THE SUNDAY TIMES GOOD UNIVERSITY GUIDE 2022

**Average salary 15 months post-graduation – UK domiciled*

Recent graduate destinations include:

BASF We create chemistry, BENTLEY, DONGHEE Guide the Vehicles, dyson, G2O WATER TECHNOLOGIES, intel, JAGUAR LAND ROVER, MERCK, MSD, NISSAN, REC SOLAR'S MOST TRUSTED, Rolls-Royce, SIEMENS, UNIVERSITY OF CAMBRIDGE, UNSW AUSTRALIA

Outstanding facilities

The department is well equipped, with extensive laboratories containing state-of-the-art equipment in materials processing, testing, analysis, simulations and characterisation.

Our courses have a very practical focus and include considerable hands-on experience within our world-class laboratories. We have invested significantly in the quality of our equipment and laboratory spaces to offer our students an enhanced learning experience, extensive practical teaching and the opportunity to gain essential skills for future careers in industry or research.

We have fully refurbished the facilities on the west side of our campus, including the S Building, home to our Department of Materials. This has made new laboratory space and equipment available to students including:

- A new 87-seater IT laboratory for taught sessions, but also available for project work and private study.
- Newly refurbished research laboratories including a new suite of bioscience and biotechnology labs.
- Students also have access to the Loughborough Materials Characterisation Centre (LMCC), our world-class facility for understanding the structure and properties of materials.
- Extensive, state-of-the-art pilot-scale polymer processing laboratories, with the addition of new mezzanine floor with experimental test facilities, providing flexible student space for computational/modelling work and project activities.

"The facilities at Loughborough are excellent and have really enhanced my learning experience. The STEMLab and LMCC allowed me to use multiple types of lab equipment, putting the theory I learnt into practice. This has given me a greater understanding of materials and helped to grow my practical, hands-on skills."

Becky
Materials Science and Engineering BEng

£17M STEMLAB TEACHING FACILITIES

STEMLab

STEMLab is a £17 million investment in state-of-the art laboratory facilities and part of a wider £25 million investment in our campus which includes an adjacent student learning and teaching hub.

STEMLab allows us to offer new ways to learn and collaborate, for example a 'drop-in' engineering workshop, alongside teaching laboratories, workshops, computer-aided design facilities, a design studio and informal learning spaces. Many of our Materials students' laboratory and practical classes are taught in these facilities. Take an interactive tour of STEMLab lboro.ac.uk/stemlab

West Park Teaching Hub

Newly refurbished with superb modern facilities for teaching small to large student groups, collaborative work spaces, and a café, the West Park Teaching Hub forms another part of the fantastic student learning experience we offer.

Loughborough Materials Characterisation Centre (LMCC)

LMCC increases our understanding of materials with cutting-edge analytical instruments and is considered to be one of the best centres of its kind in Europe. We are continually investing in new equipment to provide state-of-the art facilities for all users, including our industrial collaborators.

AWARDED 5* FOR FACILITIES
INTERNATIONAL QS STARS SCHEME 2020

Will

Automotive Materials BEng

"I was really fortunate to get two placement offers, from Vauxhall and Mini. In the end, I chose Mini which was a great place to work. My role was in the Material Laboratory where I got to put my degree into practice.

When I applied to do my degree, I was very focused on getting a job in the automotive sector upon graduation. I was fortunate and upon graduation got three different graduate job offers (all of which were in automotive). I chose to go and work for Aston Martin, which was just as I would have wished when I filled out the UCAS form four years earlier.

Following graduation, I completed a three-year graduate scheme at Aston Martin. During this time I worked my way around a few different placements in various departments, which is a great way to learn how the whole business works and a real benefit of graduate schemes in general"

Automotive Materials

MEng/BEng

MEng (Hons) DIS/DPS/DIntS*: 5 years full-time with placement year
UCAS code: J553

MEng (Hons): 4 years full-time
UCAS code: J552

BEng (Hons) DIS/DPS/DIntS*: 4 years full-time with placement year
UCAS code: J551

BEng (Hons): 3 years full-time
UCAS code: J511

Typical offers
A level: AAA (MEng) or ABB (BEng) including two from Maths, Physics and Chemistry
IB: (MEng) 37 (6,6,6 HL) or (BEng) 34 (6,5,5 HL) including any two from Maths, Chemistry or Physics at HL
BTEC Level 3 National Extended Diploma: D*DD (MEng) or DDM (BEng) with distinction in Maths units
GCSE: GCSE Maths grade 4/C

**Diploma in Industrial/Professional/International Studies*

Typical offers correct at the time of print. Please check our website for the latest version and other qualifications.

Please note that optional modules are subject to availability and timetable permitting.

Automotive Materials is a comprehensive materials engineering programme designed to prepare you for an exciting career in one of the largest and most important industrial markets in the world.

It offers a special blend of materials engineering knowledge, linked to an appreciation of vehicle and engine design, plus the management skills and the awareness that is required of professional engineers.

Loughborough has a long-established history of teaching and research in automotive materials engineering and has been recognised by major automotive companies such as Ford, Jaguar Land Rover and Rolls-Royce, as leaders in education and research in the field.

About the course

Modern vehicles are built from a wide variety and complex mix of materials and every component must meet very stringent guidelines for safety, performance and environmental impact. The course is designed to provide in-depth knowledge of materials with a specific emphasis on applications within the automotive sector so that graduates are able to tackle these challenges and balance competing priorities.

Whilst the broad philosophy of the MEng and BEng is the same, MEng students are required to study a wider range of technical subjects with additional depth, including an additional group project in their final year.

Year 1

This year is made up of compulsory modules, providing you with an introduction to materials and a solid grounding for the rest of your studies. Modules include Computer Aided Engineering, Thermodynamics, and Introductory Materials Science and Processing. In common with other materials courses, this course has a common first year allowing for greater flexibility and mobility.

Year 2

This year allows more focus for you to develop your understanding of materials and automotive engineering. You'll focus on Fracture Mechanics, Materials Processing, Statistics, Materials Characterisation, and Vehicle Loading and Suspensions, as well as Vehicle Design and Development, to name a few.

Optional placement year/study abroad

Year 3 MEng/final year BEng

This year sees the introduction of optional modules, allowing you to specialise in your preferred areas of automotive engineering. Modules include Nanomaterials, and Entrepreneurship and Innovation. Compulsory modules include Functional Materials, Vehicle and Component Design, and Automotive Crash Protection, and you'll also work on your individual project.

MEng final year

This year comprises a number of optional modules with an industrially relevant group design project, which is a great opportunity to develop your project management skills. You'll also work on other compulsory modules such Materials Modelling and Advanced Materials Characterisation, as well as optional modules to help you specialise in your chosen area.

Accredited by:

I·M3 Institute of Materials, Minerals & Mining

Placement opportunity · Study abroad · Additional award · Accredited course

Oliver

Biomaterials Engineering BEng

"The structure of learning on my course is great. I feel as though at any point I am able to approach lecturers and ask questions about what we are learning and to talk about any problems I'm facing. I really enjoyed my Thermodynamics module. The lecturers found a fun way to teach something that was quite technical, and I had never studied anything like it before."

Biomaterials Engineering

MEng/BEng

MEng (Hons) DIS/DPS/DIntS*: 5 years full-time with placement year
UCAS code: J5BX

MEng (Hons): 4 years full-time
UCAS code: J5BW

BEng (Hons) DIS/DPS/DIntS*: 4 years full-time with placement year
UCAS code: J5BZ

BEng (Hons): 3 years full-time
UCAS code: J5BY

Typical offers
A level: AAA (MEng) or ABB (BEng) including two from Maths, Physics, Chemistry and Biology
IB: (MEng) 37 (6,6,6 HL) or (BEng) 34 (6,5,5 HL) including any two from Maths, Biology, Chemistry or Physics at HL
BTEC Level 3 National Extended Diploma: D*DD (MEng) or DDM (BEng) in a relevant subject with distinctions in Maths units
GCSE: GCSE Maths grade 4/C

**Diploma in Industrial/Professional/International Studies*

Typical offers correct at the time of print. Please check our website for the latest version and other qualifications.

Please note that optional modules are subject to availability and timetable permitting.

Accredited by:

I·M3 Institute of Materials, Minerals & Mining

Learn about the fundamentals of materials, their properties and engineering methods, and how to apply these to the biomedical field, particularly within the human body.

This course builds on our strengths in materials and bio-related disciplines across the University and offers students with a leaning towards bioscience and biotechnology a route into this important and growing area of materials. Application areas include the health, sport and lifestyle sectors, regenerative medicine, and in the context of a world-wide ageing population, biomaterials and medical device technology are developing fields that are set to continue to grow for many years.

About the course

Through a careful balance of lectures, practical sessions and case studies, you will develop a thorough understanding of the properties and capabilities of an extensive range of engineering materials. These can then be applied to a wide range of industrial contexts.

You will also learn how to develop and process new materials so that they can be used within engineered systems and effectively drive new developments in products and technology. Project work forms an important part of this course, preparing you for the workplace by developing crucial transferable skills.

This course not only teaches the theory and practice of Biomaterials Engineering, it is also designed to produce graduates trained in professional skills such as team working, presentation skills, project management and report writing. There are excellent career prospects for Biomaterials graduates, spanning the healthcare sector, sport, electronics, food and retail.

Year 1

This year is made up of compulsory modules, providing you with an introduction to materials and a solid grounding for the rest of your studies. Modules include Computer Aided Engineering, Mathematics and Thermodynamics. In common with other materials courses this course has a common first year allowing greater flexibility and mobility.

Year 2

This year allows more focus for you to develop your understanding of biomaterials and engineering. This includes bio-focused modules such as Anatomy and Physiology, Biomaterials for Tissue Engineering, as well as Materials Processing and Materials in Service.

Optional placement year/study abroad

Year 3 MEng/final year BEng

This year sees more optional modules, allowing you to specialise in your preferred areas of biomaterials. Modules include Nano Materials, Advanced Processing, and Entrepreneurship and Innovation. Compulsory modules include Biomedical Component Design, Biomaterials for Drug Delivery and Composite Materials. You will also undertake an individual research project.

MEng final year

This year comprises a number of optional modules with a lot of the year spent working on a group design project. You'll also work on other compulsory modules including Advances in Biomaterials, Advanced Biochemical Engineering and Advanced Materials Characterisation, as well as optional modules which will allow you to focus on areas of biomaterials that interest you the most.

Anita

Materials Science and Engineering BEng

"My BEng degree had a huge emphasis on the business and management aspects on engineering in addition to the materials engineering and science modules. On my placement year, I worked in project management for half a year; this has both extended the learning from my degree and complemented third year business modules I undertook after my placement year."

Materials Science and Engineering

MEng/BEng

MEng (Hons) DIS/DPS/DIntS*: 5 years full-time with placement year
UCAS code: J503

MEng (Hons): 4 years full-time
UCAS code: J502

BEng (Hons) DIS/DPS/DIntS*: 4 years full-time with placement year
UCAS code: J501

BEng (Hons): 3 years full-time
UCAS code: J500

Typical offers
A level: AAA (MEng) or ABB (BEng) including two from Maths, Physics and Chemistry
IB: (MEng) 37 (6,6,6 HL) or (BEng) 34 (6,5,5 HL) including any two from Maths, Chemistry or Physics at HL
BTEC Level 3 National Extended Diploma: D*DD (MEng) or DDM (BEng) with distinction in Maths units
GCSE: GCSE Maths grade 4/C

**Diploma in Industrial/Professional/International Studies*

Typical offers correct at the time of print. Please check our website for the latest version and other qualifications.

Please note that optional modules are subject to availability and timetable permitting.

Accredited by:

I·M3 Institute of Materials, Minerals & Mining

We are one of the very best places to study this exciting subject area, being ranked 2nd in the UK for the Engineering: Materials and Minerals category in the Guardian University Guide 2022.

Covering the fundamentals, this degree will give you the opportunity to explore – while deepening your knowledge and understanding of the scientific, engineering and design aspect of materials, their structure, properties, processing, in-service behaviour and environmental impact.

About the course

The course delivers both the theory and the essential industrial relevance employers seek from graduates. The course content encompasses all aspects of materials: their selection, manufacture, testing, assembly and environmental impact both during production and at the end of life.

Through a careful balance of lectures, practical sessions and case studies, you will develop a thorough understanding of the properties and capabilities of metals, polymers, ceramics and composites, which can then be applied to a wide range of industrial contexts including aerospace, automotive, power generation and distribution, IT and manufacturing amongst many others.

You will also learn how to develop and process new materials so that they can be used within workable components and effectively drive new developments in products and technology.

Whilst the broad philosophy of the MEng and BEng is the same, MEng students are required to study a wider range of technical subjects with additional depth, including an additional group project in their final year.

Year 1

This year is made up of compulsory modules, providing you with an introduction to materials and a solid grounding for the rest of your studies. Modules include Computer Aided Engineering, Thermodynamics, and an Introductory Materials Science and Processing. In common with other materials courses, this course has a common first year allowing greater flexibility and mobility.

Year 2

This year allows more focus for you to develop your understanding of materials science and engineering. Modules include Fracture Mechanics of Materials, Materials Characterisation, Materials Modelling and Mathematics for Materials.

Optional placement year/study abroad

Year 3 MEng/final year BEng

This year sees the introduction of optional modules, allowing you to specialise in your preferred areas of materials science. Modules include Entrepreneurship and Innovation, and Sustainability, Recycling and Environmental Issues. You'll also get the chance to study Biomedical Component Design and Automotive Crash Protection. Compulsory modules include Composite Materials, Functional Materials, and Advanced Processing Methods and you'll also work on your individual project.

MEng final year

You'll be working on a group design project in this academic year, allowing you to develop project management skills, but you'll also focus on optional modules meaning that you can explore topics of your choice. Optional modules include Materials Modelling, Polymer Science, Clean Energy, Materials and Sustainability, and Advances in Biomaterials.

Oscar

Materials Science and Engineering BEng with Foundation Year

"Loughborough University offered the best possible Materials course. As my A levels did not go to plan, I had the option of choosing another university, with a lower course ranking and entry requirements. However, I chose to go through the foundation year route at Loughborough to confirm to myself that going to Loughborough was the right choice for me."

Materials Engineering Foundation Studies

UCAS code
UK/EU entry: J504
International entry: J5FY

Typical offers
A level: BBB-CCC from three A levels (or equivalent) in any subjects
GCSE: A minimum of 5 GCSEs grades 7-4 (A to C) are normally required. Minimum grade 6/B in Maths

If you don't have a scientific background, or the relevant grades to enrol onto one of our Materials courses straight away, then a foundation year is for you.

Our Foundation Studies course is primarily for those who wish to embark on an exciting career in Materials Engineering but are missing prerequisite subjects required or whose existing qualifications are not usually considered directly relevant for entry onto the core degree.

Our International Foundation course is designed for high-calibre international students who have successfully completed 12 years of education but need an extra year of study to apply for a UK undergraduate degree.

Loughborough also offers an Elite Athletes pathway for students who perform at a very high standard in their chosen sport and wish to study at Loughborough, but do not have the required qualifications due to sporting commitments.

About the course

If this is your situation, then one of our Foundation Studies courses could be what you require to bridge the gap in your studies and provide the platform for successful progression into the world of materials engineering. Completing your foundation year will enable you to progress onto the first year of a course within the department, provided the relevant progression criteria are met.

You will be taught by University staff, including specialist Foundation Studies teaching staff. You will be a full member of the Loughborough family, with the same access to the Students' Union, clubs, societies, sports facilities and support.

Completing a foundation year can be a real attribute to your overall degree success. It not only opens doors to courses that may have previously looked closed, but also provides a sound base on which to establish a successful academic career. Many who have completed the foundation year also said how beneficial it was, supporting their transition into University life.

Module overview

The Foundation Studies programme provides a background of mathematical and physical sciences, along with other essential subjects in materials engineering, designed to prepare you for successful progression onto the first year of your chosen degree programme.

Upon successful completion of this foundation course, you'll be able to progress onto the following courses:

- Automotive Materials BEng
- Biomaterials Engineering BEng
- Materials Science and Engineering BEng

General enquiries

Department of Materials
Loughborough University
Leicestershire LE11 3TU UK

T: +44 (0)1509 222527
E: materials@lboro.ac.uk

lboro.ac.uk/ug/materials

@lboroeng
/lboroeng
/lborouniversity
/lboroengineering
/company/lboroengineering