UNIVERSITY OF LIVERPOOL

Mechanical Engineering MEng

COURSE DETAILS

- A level requirements: AAA
- UCAS code: H301
- Study mode: Full-time
- Length: 4 years

KEY DATES

- Apply by: 29 January 2025
- Starts: 22 September 2025

Course overview

Study Mechanical Engineering and learn to design, build and test new products, processes and systems. You'll develop holistic engineering knowledge and problem solving abilities as you work towards an industry-accredited degree that's sought after in a wide range of sectors. This four-year Master of Engineering degree satisfies the academic requirements for you to register as a Chartered Engineer.

INTRODUCTION

Mechanical engineering is one of the oldest and broadest engineering disciplines and is the basis for a wide range of careers in engineering and beyond.

Our professionally accredited Mechanical Engineering programme offers an exciting blend of learning experiences. You'll master the fundamentals of mechanical engineering science and develop the skills, attitudes and experience demanded by 21st century engineering and society. You'll spend as much time outside the lecture theatre as possible, working in teams to apply your learning in the solution of practical problems. Graduates are well prepared for their careers ahead, and industry recognises them as highly employable.

Mechanical engineering students learn a wide range of theory and skills. This includes engineering science and practical skills such as project management and computer programming.

You'll learn in a modern, well-equipped environment that includes up-to-date laboratories, tools and computing hardware and software.

As you progress through your degree, you can choose to specialise in one of five themes: biomedical engineering, materials engineering, manufacturing, management, or simulation and analytics.

WHAT YOU'LL LEARN

- Design, build and test products and systems
- Mechanical engineering scientific fundamentals
- Thermodynamics
- Fluid and solid mechanics
- Dynamic systems
- Materials
- Electronics and mathematics
- Project management
- Computer programming
- Engineering design
- Collaborative design

ACCREDITATION

Mechanical engineering programmes are accredited (or pending accreditation), by the Institution of Mechanical Engineers. They’re a recognised qualification on the route to Chartered Engineer status.

Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

YEAR ONE

Years one and two give students the scientific understanding underpinning the practice of professional engineering. You'll also learn about project management, computer programming, and engineering design.

COMPULSORY MODULES

SOLIDS AND STRUCTURES 1 (ENGG110)

Credits: 15 / Semester: whole session

This module aims to introduce students to the fundamental concepts and theory of how engineering structures work to sustain loads. It will also show how stress analysis leads to the design of safer structures. It will also provide students with the means to analyse and design basic structural elements as used in modern engineering structures.

PROFESSIONAL ENGINEERING: A SKILLS TOOLKIT (ENGG111)

Credits: 30 / Semester: whole session

This module aims to provide students with an interesting and engaging project that will help them to immediately relate the material being taught,both within and without this module, to a practical problem that is identifiable to their engineering discipline, thus reinforcing its relevance to the topixc.

The module:
1) Seeks to provide students with an early understanding of the preliminary design processes
2) Will introduce students to formal engineering drawing and visualisation
3) Will expose the students to group work and the dynamics of working in a team
4) Will expose students to the complexity of an engineering design task
5) Will enable students to develop data analysis and plotting skills
6) Will embody an approach to learning that will engage the students for the remainder of their lives
7) Seeks to provide students with an early understanding of the detail design and manufacturing process
8. Will introduce students to industry standard computer aided engineering drawing tools and practice
9. Will enable students to develop report writing and oral presentation skills
10. Will provide students with a basic understanding of engineering components and mechanisms
11. Will embody an approach to learning that will engage the students for the remainder of their lives

ENERGY SCIENCE (ENGG116)

Credits: 15 / Semester: whole session

To develop an understanding of the basic principles of fluid mechanics, the laws of thermodynamics, and an appreciation of how to solve simple engineering problems. To develop skills in performing and reporting simple experiments.

DIGITAL ENGINEERING (ENGG125)

Credits: 15 / Semester: whole session

Students completing the module should be able to understand simple computer programs and write their own simple MATLAB programs to solve problems and process data as required by other modules and in engineering practice.
Students completing the module will be able to understand simple electrical circuits with passive and active components, mechanical (mass-spring-damper) systems and electromechanical systems (DC machines). They will learn basic mathematical, practical and computational methods for analysing and modelling these.

ENGINEERING MATHEMATICS (ENGG198)

Credits: 22.5 / Semester: whole session

To provide a basic level of mathematics including calculus and extend the student's knowledge to include an elementaryintroduction to complex variables and functions of two variables.

INTRODUCTION TO ENGINEERING MATERIALS (MATS105)

Credits: 15 / Semester: whole session

To provide students with a basic introduction to various classes of engineering materials, their mechanical properties, deformation and failure and how the properties structure and processing can be controlled to design materials with desired properties for various engineering applications.

MECHANICAL PRODUCT DISSECTION (MECH109)

Credits: 7.5 / Semester: semester 2

This is predominantly a practical module in which students work in small groups to examine in detail the workings and manufacture of a single-cylinder, 4-stroke petrol engine by dismantling it into component parts and documenting the disassembly process in a Wiki.

Programme details and modules listed are illustrative only and subject to change.

YEAR TWO

Years one and two give students the scientific understanding underpinning the practice of professional engineering. You'll also learn about project management, computer

programming, and engineering design.

COMPULSORY MODULES

AEROENGINES (AERO213)

Credits: 15 / Semester: whole session

This module covers the main technical aspects of gas turbine engines used on aircraft and other mechanical applications (e.g. power generation, marine). It covers many topics from the basic principles of aeroengines (e.g. production of thrust) through to the design of axial flow turbomachinery (compressors and turbines). An understanding of the principles of compressible flow is also developed. Students do a laboratory using the Virtual Engine Test Bench to explore aeroengine components, thermodynamics and performance. In addition, they use a commercial CFD package to perform a compressible flow simulation.

EXPERIMENTAL METHODS (ENGG201)

Credits: 7.5 / Semester: semester 1

The module focusses on the essentials of data analysis and interpretation, engineering experimentation, measurement techniques and principles of instrumentation.

SOLIDS & STRUCTURES 2 (ENGG209)

Credits: 15 / Semester: whole session

This module aims to introduce students to techniques for load and displacement analysis of simple structures.

ENGINEERING MATHEMATICS AND COMPUTING (ENGG295)

Credits: 15 / Semester: whole session

Engineering Mathematics and Computing will provide fundamental understanding of mathematical techniques used to solve Mechanical and Aerospace Engineering problems, as well as the associated implementation of these techniques in Matlab. Successful completion of this module will provide students with basic skills to further develop existing and devise new solution methodologies in a variety of engineering applications. The module will expose essentials of numerical solution of nonlinear algebraic equations, matrix linear algebra techniques, discrete transforms, as well as elements of ordinary and partial differential equations. A series of classic engineering model problems, such as the mass-spring damper, 2D trajectory calculation, computation of boundary layer velocity profiles and calculation of Strouhal number in the wake of a cylinder or an airfoil will place the acquired knowledge in an engineering context relevant to the Syllabus on offer at the Mechanical and Aerospace Department.

MATERIALS PROCESSING AND SELECTION II (MATS210)

Credits: 7.5 / Semester: semester 2

This module covers non-metallic materials and materials selection. The students will understand the processing, microstructure and properties of ceramic, polymer and composite materials. The students will also learn how to derive materials performance indices and select materials for mechanical design.

MATERIALS PROCESSING AND SELECTION I (MATS214)

Credits: 7.5 / Semester: semester 1

This module introduces the main materials processing and manufacturing techniques used to shape metals. It also introduces technologies used to modify the surface properties of metal components, and heat-treatment procedures used to change materials' mechanical properties.

ENGINEERING DESIGN (MECH212)

Credits: 15 / Semester: whole session

Professional Engineering can be defined as the application of science in the solution of problems and the development of new products, processes and systems. It is vital that all Engineering graduates have a solid design education; and this module is a core part of that.

In Year 1 students are introduced to the basic tools and techniques involved in engineering design.

In this module students are taught the basics of design theory in a lecture setting; but crucially they are required to apply this learning in a 24-week group project to design an innovative engineering product.

Students are given a design brief and are "coached" through product design specification; creative conceptual design; detailed design; 3D CAD modelling; design for manufacture, assembly and environment; and materials selection.

The module also enables students to develop and practice teamwork, communication, project management and problem solving skills.

DYNAMIC SYSTEMS (MECH215)

Credits: 15 / Semester: whole session

Dynamic systems are encountered in most engineering disciplines such as mechanical engineering, aerospace engineering, electrical engineering. These systems require specific techniques to be analysed for design or monitoring purpose.

In this module, students will learn the main methods for analysing dynamic systems in time and frequency domains. They will learn how to solve dynamical problems, how to evaluate and control the stability, the accuracy and the rapidity of a dynamical system.

This module will be mainly delivered through class lectures and assessed through a final exam. Additionally, students will be taught some experimental techniques related to second-order dynamical systems through an assessed laboratory work.

THERMODYNAMICS (MECH217)

Credits: 15 / Semester: whole session

Steam, standard air and refrigeration cycles

PROJECT MANAGEMENT (MNGT202)

Credits: 7.5 / Semester: semester 1

Project Management is a core skill for professional engineers of all types and a sound education in this subject area is required by the professional accrediting bodies. The knowledge and skills developed in this module will equip students for their future UG project work and for their careers ahead.
This module teaches students the theory of fundamental techniques in project management, risk management, and cost management.

In this modules student undertake a group "virtual project" in which they undertake all stages of project management involved n a major construction projects. The five virtual project tasks require students to apply their theoretical learning; and they provide an opportunity to develop key professional skills.

Programme details and modules listed are illustrative only and subject to change.

YEAR THREE

In years three and four, you'll study advanced engineering science and undertake a 300-hour research project on a topic of your choice. You can also choose one of the following engineering specialisms: biomedical engineering, materials engineering, manufacturing, management, or simulation and analytics.

COMPULSORY MODULES

INTRODUCTION TO FINITE ELEMENTS (ENGG302)

Credits: 7.5 / Semester: semester 1

In this module the students will gain a basic understanding of the Finite Element method and learn to use some Finite Element software. This software will then be used to analyse a variety of different problems which are relevant to both mechanical and civil engineers.

COMPUTATIONAL FLUID DYNAMICS (ENGG319)

Credits: 7.5 / Semester: semester 2

Computational fluid dynamics tools have become ubiquitous in engineering practice to design trains, planes and automobiles, to analyse the fluid flow in power generation systems and in heating, ventilation and air conditioning, and many more applications. The module will provide students with the skills to use computational fluid dynamics tools with confidence with an understanding of the underlying theory and technology.

INDIVIDUAL PROJECT (ENGG341)

Credits: 30 / Semester: whole session

The Year 3 individual research project; 300 hours student work over 2 semesters; 3 assessment stages (proposal 5%, interim 20%, final 75%).

HEAT TRANSFER (MECH301)

Credits: 15 / Semester: semester 2

The aim of this module is to give the students a good understanding of the basic mechanisms of heat transfer and to equip them to solve significant engineering problems.

They will also learn about different designs of heat exchanger and how to carry out performance/design calculations.

VIBRATION AND CONTROL (MECH303)

Credits: 15 / Semester: semester 2

This module is built on MECH215. It consists of Vibration and Control as 2 main components. Both are on an advanced level and basically deal with multi-degree-of-freedom (or multi-input multi-output) systems.

The main mathematical tools are Laplace transforms, differential equations, simultaneous linear equations, complex numbers, trigonometry, vectors and matrices, eigenvalues and eigenvectors.

ENGINEERING FLUID MECHANICS (MECH326)

Credits: 15 / Semester: semester 1

The module provides students with the fundamental concepts of Engineering Fluid Mechanics, and in particular: the role of viscosity in fluid mechanics, including the no-slip condition and the concept of vorticity; the basic principles of laminar and turbulent flow through pipes including definition and evaluation of the Fanning and Darcy friction factors; the concept of a boundary layer, including separation and transition, and basic equations for friction factor in laminar and turbulent flow with zero pressure gradient; the calculation methods of bluff-body drag using drag coefficients with qualitative explanations the potential-flow theory including the concept of irrationality and the principle of superposition; the analysis of compressible flow through constant-area ducts accounting for friction or heat transfer and to use the Fanno- and Rayleigh-flow tables; the analysis of external compressible flow including expansion and compression turns (Prandtl-Meyer expansions and oblique shock waves).

MECHANICAL ENGINEERING CAPSTONE 1 (MECH327)

Credits: 15 / Semester: whole session

The 2-year Capstone Projects are a hallmark of the Mechanical Engineering MEng programmes at Liverpool. They are group projects in which students apply their scientific knowledge, design training and management skills to design-build-test innovative engineering products or systems. These projects provide students an opportunity to develop and evidence a wide range of technical, personal and professional skills. The Capstone modules make the greatest contribution to graduate employability.

Students are given the choice of project from a portfolio of 6-8 options: some target international sporting competition (eg Velocipede or Formula Student); others are industry-led and address real world challenges (eg Nuclear Rover decommissioning robot with NNL or Paediatric Wheelchairs with Alder Hey Hospital). The range of available projects varies each year.

Each project team is assigned an academic project supervisor and a dedicated member of technical staff. You will work closely with these staff and a range of other technical experts from industry and/or the research community. It should be noted that the students "own" their project and it is their responsibility to specify, plan, manage and report on all project work.

Students will be timetabled for 4-hours per week but will be expected to spend a significant amount of additional time working on their project.

A variety of assessment methods are used that are as close as possible to professional engineering practice.

At four key points in the year the Careers and Employability Service will join the module to help students reflect on, record in CV, and communicate at interview the professional development.

ADVANCED MODERN MANAGEMENT (MNGT352)

Credits: 7.5 / Semester: semester 1

The Aims of this module are as follows:

To introduce the student to various aspects of advanced modern management.

To develop a knowledge and understanding of modern management tools.

To stimulate an appreciation of management and its importance in organisational success.

OPTIONAL MODULES

UNCERTAINTY, RELIABILITY AND RISK 1 (ENGG304)

Credits: 7.5 / Semester: semester 1

This module covers broad aspects of uncertainty quantification methods, reliability analysis and risk assessment in engineering applications. It also provides understanding of statistical analysis of engineering data and computational methods for dealing with uncertainty in engineering problems.

CARDIOVASCULAR BIOENGINEERING (ENGG311)

Credits: 7.5 / Semester: semester 2

To introduce engineering students to various bio fluid mechanics problems. In particular the fluid mechanics of blood flow will be presented in terms that are familiar to students of engineering. Students will be expected to relate the biological structure of components of the circulatory system to mechanical and physical function.

LASERS IN ENGINEERING (ENGG312)

Credits: 7.5 / Semester: semester 2

The Module provides an overview of the fundamental principles of laser technology including optical principles, key features and attributes of lasers, laser beam properties and the engineering applications context of the material.

ADVANCED ENGINEERING MATERIALS (MATS301)

Credits: 7.5 / Semester: semester 1

This module aims to understand advanced engineering materials, focusing on non-ferrous alloys and composite materials. It covers the processing, heat treatment, microstructure and properties of Al, Ti and Ni alloys. It introduces constituent materials, manufacturing methods, test methods and mechanical response of composite materials.

SMART MATERIALS (MATS315)

Credits: 7.5 / Semester: semester 2

This module introduces students to the facilitating world of ‘Smart Materials’. The term ‘Smart Materials’ is used to define a broad collection of materials that have the in-built ability to ‘actuate’ in some way in response to external stimulus. Examples of ‘Smart materials’ include piezoelectrics, electrostrictive materials, shape memory alloys, ferrofluids, various biomimetic materials plus a host of others. This module looks at a selection of smart materials and considers the underlying reasons for the actuating behavior, key performance indicators that aid materials selection, aspects of manufacturing associated with the exploitation of the materials, plus engineering applications of these facilitating and highly useful materials.

BIOMEDICAL ENGINEERING (MECH305)

Credits: 7.5 / Semester: semester 1

This module will introduce the inter-disciplinary subject of biomedical engineering to engineering students with a focus on biomechanics of the cardiovascular system, the eye and bone.

The module will cover ageing and disease of tissues and prosthetic devices including their design and optimisation for tissue repair. The course will be delivered with lectures containing interactive elements.

Assessment will be via an exam and two pieces of coursework.

ADDITIVE MANUFACTURING (MNFG308)

Credits: 7.5 / Semester: semester 1

To provide an overview on the role of additive manufacturing in new product development. To develop a generic understanding on the principles and the complete process chain of additive manufacturing processes. To provide an awareness on recent developments in additive manufacturing and associated technologies.

MANAGING PRODUCT DEVELOPMENT (MNGT205)

Credits: 7.5 / Semester: semester 1

The module teaches the management of new product development. It is taught in a traditional lecture style culminating in an exam.

Successful students will have acquired knowledge and understanding at a broad level of the process and how it is executed in a modern industrial environment.

ENTERPRISE STUDIES (MNGT324)

Credits: 7.5 / Semester: semester 2

The module comprises a group based initiative to conceptualise design and develop a technology based business plan. Successful students will gain an understanding of enterprise and top level strategic company management. Assessment is through a combination of a report and a formal presentation.

Programme details and modules listed are illustrative only and subject to change.

YEAR FOUR

In years three and four, you'll study advanced engineering science and undertake a 300-hour research project on a topic of your choice. You can also choose one of the following engineering specialisms: biomedical engineering, materials engineering, manufacturing, management, or simulation and analytics.

COMPULSORY MODULES

ADVANCED FLUID MECHANICS AND AERODYNAMICS (AERO406)

Credits: 15 / Semester: semester 1

To reinforce and deepen the students' understanding of:

— the mathematical description of fluid kinematics.

— the physical laws expressed by the equations of fluid motion.

— the assumptions associated with particular limits of the equations of fluid motion.

— simple exact solutions of the equations of motion.

— the differences between laminar and turbulent flow.

— the origins of laminar-turbulent flow transition

— the physics of turbulence

— the need for turbulence modelling and fundamental concepts of turbulence modeling.

To introduce students to advanced concepts in potential flow theory building upon existing knowledge of:
— the analytical generation of inviscid flow over two-dimensional objects using elementary potential flows.
— the mathematical description of potential flow from the incompressible to the supersonic regime.
— the analytical calculation of resulting forces and moments on lifting surfaces.
— the numerical computation of aerodynamic properties using panel methods
— the numerical computation of flow properties using the Method of Characteristics in compressible potential flow

To introduce students to:

— the mathematical nature of different classes of partial differential equations and the implications for their numerical solution.

— the concept of scientific computing and its basic elements: solution of linear and nonlinear systems, eigenvalue problems, differentiation and integration.

To enable student to:

— solve simple fluid mechanics problems in Matlab and analyze the results.

— recognise the capabilities and weaknesses of CFD.

— choose appropriate levels of CFD analysis for a specific problem.

— use a suitable CFD package, including meshing and setting up a simulation.

— solve laminar and turbulent flow examples using a CFD package and analyze the results.

STRUCTURAL INTEGRITY (ENGG409)

Credits: 15 / Semester: semester 2

This module introduces the concepts required to maintain structural integrity. Topics covered are: detecting structural defects, predicting when defects will cause failure, and mitigating against failure.

MECHANICAL ENGINEERING CAPSTONE 2 (MECH431)

Credits: 30 / Semester: whole session

The 2-year Capstone Projects are a hallmark of the Mechanical Engineering MEng programmes at Liverpool. They are group projects in which students apply their scientific knowledge, design training and management skills to design-build-test innovative engineering products or systems. These projects provide students an opportunity to develop and evidence a wide range of technical, personal and professional skills. The Capstone modules make the greatest contribution to graduate employability.

Students are given the choice of project from a portfolio of 6-8 options: some target international sporting competition (eg Velocipede or Formula Student); others are industry-led and address real world challenges (eg Nuclear Rover decommissioning robot with NNL or Paediatric Wheelchairs with Alder Hey Hospital). The range of available projects varies each year.

Each project team is assigned an academic project supervisor and a dedicated member of technical staff. You will work closely with these staff and a range of other technical experts from industry and/or the research community. It should be noted that the students "own" their project and it is their responsibility to specify, plan, manage and report on all project work.

Students will be timetabled for 4-hours per week but will be expected to spend a significant amount of additional time working on their project.

A variety of assessment methods are used that are as close as possible to professional engineering practice.

At four key points in the year the Careers and Employability Service will join the module to help students reflect on, record in CV, and communicate at interview the professional development.

ENERGY AND THE ENVIRONMENT (MECH433)

Credits: 15 / Semester: semester 2

This modules discusses energy generation and usage, and how they complement each other. The topics are introduced in lectures that then lead onto a case study on a specific topic.

NUCLEAR TECHNOLOGIES (MECH434)

Credits: 7.5 / Semester: semester 1

The module provides an understanding of nuclear engineering, with coverage going from the atomic scale through to the bulk scale. The topics will cover reactor dynamics, design and operation, lifetime behaviour, evolution of technologies and nuclear waste. For example, understanding the implications of the fission/fusion processes themselves on the behaviour of the core.

ENTERPRISE STUDIES (MNGT414)

Credits: 7.5 / Semester: semester 2

The module teaches the concepts of Entrepreneurship, Intrapreneurship, Company Infrastructure and Investment Proposals. It is taught using lectures, class questions, case studie sand a comprehensive coursework assignment. Successful students will have acquired knowledge and understanding at mastery level of the process and how itis executed in a modern industrial environment.

OPTIONAL MODULES

MUSCULOSKELETAL BIOMECHANICS (ENGG410)

Credits: 15 / Semester: semester 2

This module will give students an understanding of the biomechanics of the musculoskeletal system and will cover techniques used to measure and analyse body movements as mechanical systems.

TISSUE ENGINEERING (ENGG412)

Credits: 15 / Semester: semester 2

The module will explore the understanding for the need for enhanced control of material induced biological interactions and how we can utilise novel material development and engineering techniques to control biological responses from the “bottom-up” (controlled biological interactions), developing the next generation of smart-implantable medical devices. As well as presenting fundamental concepts that are relevant to real clinical situations the module will also explore the need for cost effective solutions and viable routes for scale up and translation.

ADVANCED 4TH YEAR RESEARCH PROJECT (ENGG443)

Credits: 15 / Semester: whole session

This module focuses on a specific project related to a students third year project, with a journal style paper written.

STRUCTURAL BIOMATERIALS (MATS410)

Credits: 15 / Semester: semester 1

This modules covers topics related to the structure and properties of materials that are used in medical devices, including metals and alloys, polymers and ceramics. Corrosion and polymer degradation is also covered.

SMART MATERIALS (MATS515)

Credits: 7.5 / Semester: semester 2

This module introduces students to the facilitating world of 'Smart Materials'. The term 'Smart Materials' is used to define a broad collection of materials that have the in-built ability to 'actuate' in some way in response to external stimulus. Examples of 'Smart materials' include piezoelectrics, electrostrictive materials, shape memory alloys, ferrofluids, various biomimetic materials plus a host of others. This module looks at a selection of smart materials and considers the underlying reasons for the actuating behavior, key performance indicators that aid materials selection, aspects of manufacturing associated with the exploitation of the materials, plus engineering applications of these facilitating and highly useful materials.

MECHATRONICS (MECH415)

Credits: 7.5 / Semester: semester 1

This module aims to provide students with an appreciation of the challenges related to the design of Mechatronics systems. Both hardware and software integration issues will be studied within this module. General design principles will be introduced first and learning will focus on the popular Arduino platform. The module will also expose students to state-of-the-art robotics, as example of modern mechatronic systems.

LASER MATERIALS PROCESSING (MECH605)

Credits: 15 / Semester: semester 1

The module will cover: how lasers work, what are the key beam properties of high power lasers, how the beam is deployed and delivered to the process/workpiece, safety in laser materials processing, and the working principles and industry practice for a range of laser processes.

INDUSTRIAL ROBOTICS AND AUTOMATED ASSEMBLY (MNFG409)

Credits: 15 / Semester: semester 2

This module investigates how industrial robots and other equipment are used and integrated into more complex automated systems. The module emphasis is upon the application and use of these systems, with less emphasis on the underlying theoretical mechanisms. The module is based in the concept of learning through doing, the underlying content being presented as videos, while the contact time is used in practical sessions using industrial robots and in the development of robotic systems using industrial simulation software. The assessments are designed to help reinforce understanding rather than short term memory. As an FHEQ level 7 module the tasks and assessments are designed to develop deeper knowledge and skill in application than that expected for those at FHEQ level 6.

DESIGN FOR ENVIRONMENT, MANUFACTURE AND ASSEMBLY (MNFG413)

Credits: 7.5 / Semester: semester 2

The aim of this module is to provide an introduction to the tools and methods of Eco-design, Design for Manufacture and Assembly using real, everyday products as examples.

Programme details and modules listed are illustrative only and subject to change.

HOW YOU'LL LEARN

We are leading the UK's involvement in the international Conceive-Design-Implement-Operate (CDIO) initiative – an innovative educational framework for producing the next generation of engineers.

Our degree programmes encompass the development of a holistic, systems approach to engineering. Technical knowledge and skills are complemented by a sound appreciation of the life-cycle processes involved in engineering and an awareness of the ethical, safety, environmental, economic, and social considerations involved in practicing as a professional engineer.

You will be taught through a combination of face-to-face teaching in group lectures, laboratory sessions, tutorials, and seminars. Our programmes include a substantial practical component, with an increasing emphasis on project work as you progress through to the final year. You will be supported throughout by an individual academic adviser.

HOW YOU'RE ASSESSED

Assessment takes many forms, each appropriate to the learning outcomes of the particular module studied. The main modes of assessment are coursework and examination. Depending on the modules taken, you may encounter project work, presentations (individual and/or group), and specific tests or tasks focused on solidifying learning outcomes.

LIVERPOOL HALLMARKS

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to

ensure our students graduate as digitally fluent and confident global citizens.

Careers and employability

Mechanical engineering graduates are sought after in engineering fields and a wide range of other sectors. Graduates go on to work in engineering fields including healthcare, food production, aerospace, construction, power generation and manufacturing.

Recent employers of Mechanical Engineering graduates include:

- Aerospace/Aviation: Airbus, British Airways, Jaguar Land Rover, Rolls Royce
- Engineering/Construction: Arup, Balfour Beatty, Bentley, Corus, Mott Macdonald, Mouchel, Pilkington, Siemens, Tarmac
- Defense/Military: BAE Systems, British Army, RAF (Royal Air Force), Royal Navy
- Utilities/Energy: BMI, National Grid Transco, National Nuclear Laboratory, United Utilities
- Transportation/Infrastructure: Highways Agency, Network Rail.

4 IN 5 **OF OUR ENGINEERING STUDENTS FIND THEIR MAIN ACTIVITY AFTER GRADUATION MEANINGFUL.**

Graduate Outcomes, 2018-19.

Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

TUITION FEES

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)	
Full-time place, per year	£9,250
Year in industry fee	£1,850
Year abroad fee	£1,385

International fees	
Full-time place, per year	£27,200
Year in industry fee	£1,850
Year abroad fee	£13,600

Fees shown are for the academic year 2024/25. Please note that the Year Abroad fee also applies to the Year in China.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support. Learn more about paying for your studies..

ADDITIONAL COSTS

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This may include a laptop, books, or stationery. All safety equipment, other than boots, is provided free of charge by the department.

Find out more about the additional study costs that may apply to this course.

SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries to provide tuition fee discounts and help with living expenses while at university.

Check out our Liverpool Bursary, worth up to £2,000 per year for eligible UK students. Or for international students, our Undergraduate Global Advancement Scholarship offers a tuition fee discount of up to £5,000 for eligible international students starting an undergraduate degree from September 2024.

Discover our full range of undergraduate scholarships and bursaries

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Entry requirements

The qualifications and exam results you'll need to apply for this course.

Your qualification	**Requirements** About our typical entry requirements
A levels	AAA including Mathematics and a second science. Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **AAB** with **A** in the EPQ. You may automatically qualify for reduced entry requirements through our contextual offers scheme.
GCSE	4/C in English and 4/C in Mathematics
Subject requirements	Mathematics and a second science. Applicants following the modular Mathematics A Level must be studying A Level Physics or Further Mathematics as the second science (or must be studying at least one Mechanics module in their Mathematics A Level). Accepted Science subjects are Biology, Chemistry, Computing, Economics, Electronics, Environmental Science, Further Mathematics, Geography, Geology, Human Biology, Physics and Statistics. For applicants from England: For science A levels that include the separately graded practical endorsement, a "Pass" is required.
BTEC Level 3 Subsidiary Diploma	Acceptable at grade Distinction alongside AA in A Level Mathematics and a second science.
BTEC Level 3 Diploma	D*D in relevant BTEC considered alongside A Level Mathematics grade A. Accepted BTECs include Aeronautical, Aerospace, Mechanical, Mechatronics and Engineering.

Your qualification	**Requirements** About our typical entry requirements
BTEC Level 3 National Extended Diploma	Not accepted without grade A in A Level Mathematics
International Baccalaureate	35 overall, including 5 at Higher Level Mathematics and Physics
Irish Leaving Certificate	H1, H1, H2, H2, H2, H2 including H1 in Higher Mathematics and Higher Second Science.
Scottish Higher/Advanced Higher	Pass Scottish Advanced Highers with grades AAA including Mathematics and a second science.
Welsh Baccalaureate Advanced	Not accepted
Cambridge Pre-U Diploma	D3 in Cambridge Pre U Principal Subject is accepted as equivalent to A-Level grade A Global Perspectives and Short Courses are not accepted.
Access	Not accepted
International qualifications	Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

ALTERNATIVE ENTRY REQUIREMENTS

- If your qualification isn't listed here, or you're taking a combination of qualifications, contact us for advice
- Applications from mature students are welcome.

THE ORIGINAL REDBRICK