

# Engineering

 BEng (Hons)

## COURSE DETAILS

- A level requirements: [AAB](#)
- UCAS code: H100
- Study mode: Full-time
- Length: 3 years

## KEY DATES

- Apply by: [25 January 2023](#)
- Starts: 25 September 2023

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## Course overview

Study Engineering and you will have the opportunity to delve into a huge range of disciplines. Become a problem solver, not just learning how to fix things but to develop and invent from the very start.

## INTRODUCTION

Following a broad first year of study covering all disciplines within the School, students on this programme will be required to transfer their registration onto one of the following engineering

programmes, depending on whether they are on the three or four-year programme.

- [Aerospace Engineering BEng](#) (H425)
- [Industrial Design BEng](#) (3D52)
- [Mechanical Engineering BEng](#) (H300)

## WHAT YOU'LL LEARN

- Design, build and test products and systems
  - Computer programming
  - Engineering design
  - Collaborative design
  - How to conduct independent research
  - How to deal with complex problems that may require compromise to meet competing requirements
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# Course content

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

## YEAR ONE

In week seven of the second semester students take a week long course in Creo, a computer-aided design software.

## COMPULSORY MODULES

### **ELECTRICAL CIRCUITS FOR ENGINEERS (ELEC121)**

**Credits: 7.5 / Semester: semester 1**

To provide students with a basic understanding of electronics from first principles covering analogue and electromechanical systems. Basic circuits and theory will be introduced including the use of semiconductor devices such as diodes and transistors. Electromechanics will be developed to provide the student with a fundamental knowledge of the principles of DC and AC machines, transformers and linear actuators

### **ELECTROMECHANICAL SYSTEMS (ENGG121)**

**Credits: 7.5 / Semester: semester 2**

To provide students with a basic understanding of modelling and simulation techniques. Mathematical modelling and graph theory will be introduced to develop practical skills in the modelling and designing of different types of systems including electromechanical systems.

### **FLUID MECHANICS (ENGG113)**

**Credits: 7.5 / Semester: semester 1**

This module introduces fluid mechanics to the First Year Undergraduate students, describes the fundamental principles of fluid property, dimension analysis, hydrostatics and hydrodynamics. Students will be able to solve simple engineering problems involves steady fluid flow.

### **INTRODUCTION TO STATISTICS AND PROGRAMMING FOR ENGINEERS (ENGG185)**

**Credits: 7.5 / Semester: semester 1**

This module introduces students to the basic concepts and principles of elementary statistics and programming. It explains the purposes and advantages of analysing data collected specifically to solve problems in engineering, reviews available software tools and programming languages used to formulate and answer basic engineering questions. It draws on examples from applications across the range of School of Engineering program areas.

## **ENGINEERING MATHEMATICS (MATH198)**

**Credits: 22.5 / Semester: whole session**

MATH198 is a Year 1 mathematics module for students of programmes taught in the School of Engineering, e.g. Aerospace, Civil, Mechanical or Industrial Design Engineering. It is designed to reinforce and build upon A-level mathematics, providing you with the strong background required in your engineering studies and preparing you for the Year 2 mathematics module MATH299 (Mathematics engineering II). In the first semester, the foundations are laid: differential calculus, vector algebra, integration and applications. Semester two covers complex numbers, differential equations, Laplace transformations and functions of two variables

## **MECHANICAL ENGINEERING DESIGN A (MECH113)**

**Credits: 15 / Semester: semester 1**

This module provides students with an introduction to mechanical design and the skills required by a professional engineer.

The module is configured around a group design project but is enhanced with lecture material and practical exercises to introduction to mechanical design and the skills required by a professional engineer.

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The majority of these are brought together through their application to the design project that runs alongside them.

## **MECHANICAL ENGINEERING DESIGN B (MECH114)**

**Credits: 15 / Semester: semester 2**

This module provides students with a hands on introduction to mechanical design and the skills required by a professional engineer.

The module is configured around a group design project but is enhanced with lecture material and practical exercises to introduce skills such as report writing, oral presentation, computer aided design and the analysis of engineering mechanisms and components.

The majority of these are brought together through their application to the design project that runs alongside them.

## **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.

## **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.

## **THERMODYNAMICS I (ENGG112)**

**Credits: 7.5 / Semester: semester 2**

The module provides an introduction to the laws of thermodynamics which are essential to understanding many branches of engineering. The module will be taught through reference to everyday examples and applications drawn from aerospace, civil and mechanical engineering.

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

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## **YEAR TWO**

Year two follows your chosen path from:

- [Aerospace Engineering BEng](#) (H425)
- [Industrial Design BEng](#) (3D52)
- [Mechanical Engineering BEng](#) (H300)

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

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## **YEAR THREE**

Year three follows your chosen path from:

- [Aerospace Engineering BEng](#) (H425)
- [Industrial Design BEng](#) (3D52)
- [Mechanical Engineering BEng](#) (H300)

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

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## **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.

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# Careers and employability

Engineering graduates are sought after in a variety of 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.

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

*Graduate Outcomes, 2018-19.*

Recent employers of Engineering graduates include:

- Airbus
- Arup
- BAE Systems
- Balfour Beatty
- Bentley
- BMI
- British Airways
- British Army
- Corus
- Highways Agency
- Jaguar Land Rover
- Mott Macdonald
- Mouchel
- National Grid Transco
- National Nuclear Laboratory
- Network Rail
- Pilkington
- RAF
- Rolls Royce
- Royal Navy
- Siemens
- Tarmac
- United Utilities.

## PREPARING YOU FOR FUTURE SUCCESS

At Liverpool, our goal is to support you to build your intellectual, social, and cultural capital so that you graduate as a socially-conscious global citizen who is prepared for future success. We achieve this by:

- Embedding employability within your curriculum, through the modules you take and the opportunities to gain real-world experience offered by many of our courses.
  - Providing you with opportunities to gain experience and develop connections with people and organisations, including student and graduate employers as well as our global alumni.
  - Providing you with the latest tools and skills to thrive in a competitive world, including access to Handshake, a platform which allows you to create your personalised job shortlist and apply with ease.
  - Supporting you through our peer-to-peer led [Careers Studio](#), where our career coaches provide you with tailored advice and support.
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# Fees and funding

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

## TUITION FEES

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 tuition fees, funding and student finance.](#)

<b>UK fees</b> Also 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

<b>International fees</b>	
Full-time place, per year	£25,750

*Fees stated are for the 2023-24 academic year.*

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## 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.

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## SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries to help cover tuition fees and help with living expenses while at university.

[Scholarships and bursaries you can apply for from the United Kingdom](#)

Select your country or region for more 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 <a href="#">About our typical entry requirements</a>
A levels	<p>AAB including Mathematics and a second science.</p> <p>Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is <b>ABB</b> with <b>A</b> in the EPQ.</p> <p>You may automatically qualify for reduced entry requirements through our <a href="#">contextual offers scheme</a>.</p> <p>If you don't meet the entry requirements, you may be able to complete a foundation year which would allow you to progress to this course.</p> <p>Available foundation years:</p> <ul style="list-style-type: none"><li>• <a href="#">Engineering Foundation BEng (Hons) (4 year route including a Foundation Year at Carmel College)</a></li></ul>
GCSE	4/C in English and 4/C in Mathematics

<b>Your qualification</b>	<b>Requirements</b> <a href="#">About our typical entry requirements</a>
Subject requirements	<p>Mathematics and a second science.</p> <p>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).</p> <p>Accepted Science subjects are Biology, Chemistry, Computing, Economics, Electronics, Environmental Science, Further Mathematics, Geography, Geology, Human Biology, Physics and Statistics.</p> <p>For applicants from England: For science A levels that include the separately graded practical endorsement, a "Pass" is required.</p>
BTEC Level 3 Subsidiary Diploma	Acceptable at grade Distinction* alongside BB in A Level Mathematics and a second science.
BTEC Level 3 Diploma	Distinction* Distinction* in relevant BTEC considered alongside A Level Mathematics grade B. Accepted BTECs include Aeronautical, Aerospace, Construction, Mechanical, Mechatronics and Engineering.
BTEC Level 3 National Extended Diploma	D*DD in acceptable BTEC, plus B in A level Maths (not accepted without B in A level Maths)
International Baccalaureate	35 overall including 5 in Higher Level Mathematics and 5 in Higher Level Physics.
Irish Leaving Certificate	H1,H1,H2,H2,H2,H3, including H2 in Higher Maths and Higher Second Science. We also require a minimum of H6 in Higher English or O3 in Ordinary English

Your qualification	<b>Requirements</b> <a href="#">About our typical entry requirements</a>
Scottish Higher/Advanced Higher	Pass Scottish Advanced Highers with grades AAB including Mathematics and a second science
Welsh Baccalaureate Advanced	Acceptable at grade B alongside AA in A Level Mathematics and a second science.
Cambridge Pre-U Diploma	D3 in Cambridge Pre U Principal Subject is accepted as equivalent to A-Level grade A M2 in Cambridge Pre U Principal Subject is accepted as equivalent to A-Level grade B Global Perspectives and Short Courses are not accepted.
Access	Considered if taking a relevant subject. Check with Department or Admissions team.
International qualifications	<div data-bbox="1002 1126 1441 1261" style="border: 1px solid gray; padding: 5px; text-align: center;">           Select your country or region to view specific entry requirements.         </div> <p>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 <a href="#">University of Liverpool International College</a>, means you're guaranteed a place on your chosen course.</p>

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## 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.
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**THE ORIGINAL**  
**REDBRICK**

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