

# Architectural Engineering

 BEng (Hons)

## COURSE DETAILS

- A level requirements: [AAB](#)
- UCAS code: HK26
- Study mode: Full-time
- Length: 3 years

## KEY DATES

- Apply by: [29 January 2025](#)
- Starts: 22 September 2025

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## Course overview

Architectural Engineering is for students who wish to work at the intersection of architecture and structural engineering. Students develop a multidisciplinary skill set to design building structures and components of critical infrastructure. This includes learning about the technical, societal, historical, economic and environmental aspects needed to manage complex systems in the built environment.

## INTRODUCTION

The Architectural Engineering degree is a multidisciplinary degree, encompassing civil engineering and architecture jointly delivered by the School of Engineering and the School of Architecture.

Architectural engineers are responsible for the design of different systems within a building or an aspect of critical infrastructure with a particular focus on key areas.

As a student, you will be provided with a multidisciplinary skill set to design building structures, bridges and critical infrastructure incorporating both the solid technical grounding that a typical civil/structural engineering degree provides; alongside a robust and wider appreciation of the architectural, societal, economic and environmental aspects associated to a particular design solution.

This programme also has a year abroad option, an incredible opportunity to spend an academic year at one of our partner universities.

## WHAT YOU'LL LEARN

- Create innovative design strategies
  - Model and design heating, ventilation and air conditioning systems
  - Acoustic performance and lighting design
  - Hands-on construction experience
  - Design building structures, bridges and critical infrastructures
  - How to lead an individual research project
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## **ACCREDITATION**

This degree is accredited by the Joint Board of Moderators (JBM) comprising the Institution of Civil Engineers, Institution of Structural Engineers, Institute of Highway Engineers, the Chartered Institution of Highways and Transportation and the Permanent Way Institution on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer (IEng) and partially meeting the academic requirement for registration as a Chartered Engineer (CEng). Candidates must hold a masters or doctorate accredited as further learning for CEng to hold accredited qualifications for CEng registration.

See [www.jbm.org.uk](http://www.jbm.org.uk) for further information and details of Further Learning programmes for CEng.

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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 the first year, students are required to take **MATH198**.

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### COMPULSORY MODULES

#### **ENVIRONMENTAL DESIGN 1 (ARCH111)**

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

The module is an introduction to the principles of net zero carbon design. It aims to give students an understanding of the role of a building as a modifier of climate with reference to traditional climatically responsive architecture, and the role of buildings in the context of global energy usage, environmental impact, climate change and net zero carbon design.

#### **GEOMECHANICS 1 (CIVE120)**

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

The Geotechnical Engineer is responsible for the safe design of how a building or infrastructure asset interacts with the ground. This module introduces students to the role of the Geotechnical Engineer and the fundamental principles and concepts that form the basis of soil mechanics

#### **INTRODUCTION TO STRUCTURAL MATERIALS (ENGG108)**

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

This module introduces students to important mechanical properties of metallic alloys, polymers, ceramics, construction materials and composites used in engineering industry. It also introduces the mechanical testing techniques used to measure such properties, the common mechanisms of materials and component failure in use, and some appreciation of materials processing. The laboratory sessions are designed to familiarise students with engineering laboratory methods and procedures, as well as providing an experience of hands-on mechanical testing techniques.

## **SOLIDS AND STRUCTURES 1 (ENGG110)**

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

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.

## **CIVIL AND ARCHITECTURAL ENGINEERING PROJECTS (CIVE162)**

**Credits: 30 / Semester: semester 2**

This module provides students with an introduction to projects within the built environment, the roles of professional engineers, the professions they will interact with, and the skills required by a professional engineer operating in the built environment

## **ENGINEERING MATHEMATICS (ENGG198)**

**Credits: 22.5 / Semester: semester 2**

ENGG198 is a Year 1 mathematics module for students of programmes taught in the School of Engineering, e.g. Aerospace, Civil, Architectural, Mechanical, Product Design and Industrial Design Engineering. It is designed to reinforce and build upon A-level (or equivalent) mathematics, providing you with the strong background required in your engineering studies and preparing you for Year 2 mathematics modules.

## **INTRODUCTION TO ENGINEERING MATERIALS (MATS105)**

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

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.

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

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## **YEAR TWO**

During year two, you will have a week of real, hands-on construction experience at 'The Constructionarium'. The Constructionarium takes place at a six-hectare site, specifically designed and built to provide a range of challenging teaching and learning conditions for students.

## **COMPULSORY MODULES**

### **ENVIRONMENTAL DESIGN 2 (ARCH211)**

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

This module introduces students to energy and environmental issues, particularly those that must be faced by the discipline of architecture. The aim of this module is to provide an introduction to design of passive environmental systems for buildings, their integration into building fabric and structural systems, and selection of appropriate equipment and materials. Both the fundamentals and presentations of case studies (including lessons from the vernacular) will be used to enhance the understanding environmental simulation. The module will be delivered by weekly 2-hour lectures, and assessed. There are two mandatory assessments: a Group Report on Vernacular Architecture and the Application of Passive Strategies (50% of total mark), and an individual report (50% of total mark) showing evidence of applying passive strategies for the students' design studio project (for students taking Year 2 Design Studio) or a critique of a contemporary building on its potential to use appropriate passive strategies for the climate it resides in.

### **GEOMECHANICS 2 (CIVE220)**

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

This module introduces students to the theoretical framework of geotechnical engineering. It emphasizes soil as a material and provides an introduction to the application of the theory to practical geotechnical engineering problems including bearing capacity of foundations.

### **GROUP DESIGN PROJECT (CIVE263)**

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

The students are provided with a realistic design brief that needs to be met over the course of the semester. This is achieved via a defined set of realistic work stages which enables the students to produce an open-ended structural design within a group working environment, thus promoting teamwork and industrial awareness. The final deliverable will be the submission of structured design portfolio/sketchbook and oral presentation to academic members of staff and relevant industry partners.

### **PROGRAMMING FOR CIVIL ENGINEERS (CIVE286)**

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

Students will be introduced to the basic concepts of computer programming and Excel to solve engineering problems. Gain knowledge of basic procedural programming concepts. Become proficient in the use of Excel and Excel Macros. Enhance problem solving skills. Gain experience in solving engineering problems using a software tool.

## **STRUCTURAL ELEMENT DESIGN (CIVE241)**

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

This module provides an overview of basic structural design concepts and the application of common materials in construction including steelwork, reinforced concrete (RC), timber, and masonry. It covers fundamental principles and theoretical background and provides design examples based on Eurocodes.

## **ENVIRONMENTAL PLANNING AND INFRASTRUCTURE PROJECT (CIVE261)**

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

This module provides students with an introduction to the contexts of transport and infrastructure, and the skills required by a professional engineer operating in this sector.

## **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.

## **ENGINEERING MATHEMATICS II (CIVE299)**

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

To introduce some advanced Mathematics required by Engineers, Aerospace Engineers, Civil Engineers and Mechanical Engineers. To assist students in acquiring the skills necessary to use the mathematics developed in the module.

## **STRUCTURAL BEHAVIOUR (CIVE203)**

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

This module builds on Year 1 structural analysis focussing on detailed concepts of structural mechanics to improve the understanding of students related to structural behaviour. Additionally, computer-based structural analysis is introduced as well as applications are discussed in a structural laboratory. Seminars with professional engineering from industry and academia are also organized to enhance professional networks and show different career paths.

## **DIGITAL MODELLING (CIVE287)**

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

The module is an introduction to the principles of digital modelling in civil and architectural engineering, with structural health monitoring (SHM) being the mechanism to teach both digital methods and modelling techniques. It aims to give students an understanding of the SHM topic, since there is an ever-increasing industry demand to ensure the safety plus assess the state of health of existing structures and infrastructure. In addition, it will provide students with the tools and skills which can be implemented to develop sustainable maintenance and monitoring schemes that are critically important for professional engineering practice, via a process of SHM planning inclusive of data collection, registration and analysis.

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

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## **YEAR THREE**

The programme gives you the opportunity to undertake an individual research project in year three. Teaching staff offer projects based on their research expertise.

## **COMPULSORY MODULES**

### **SUSTAINABLE DESIGN AND CONSTRUCTION MANAGEMENT (CIVE350)**

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

Sustainability and Management are areas of professionalism that are very important within the construction industry and wider built environment sector. Both areas are also emerging as new and exciting career paths for many graduate civil engineers plus architectural engineers. On completion of this module, students will understand a range of approaches to designing for climate change adaptation and net-zero carbon implementation, as well as appreciate diverse management practices associated with modern methods of construction plus industry innovation. In addition, skills will be gained by students in career evaluation, market analysis, design appraisal, options review and project judgements, all linked to enhanced graduate employment and responsible decision-making as a professional engineer.

### **CONTEXT 3.1: HISTORY AND THEORY OF ARCHITECTURE (ARCH321)**

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

The module uses lectures from staff to introduce specialised research themes and topics in architectural history and theory, and is supported by group and individual research. Students are able to choose topics for which they would like to attend further group tutorials / seminars. The module is assessed by an MCQ exam (50%) and a 2,000-word essay (50%).

### **ENVIRONMENTAL DESIGN 3 (ARCH311)**

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

The aim of the course is to develop from user requirements an introduction to design of environmental systems for large buildings, selection of appropriate equipment and materials, and their integration into building fabric and structural systems. The three topics are Artificial Lighting, Acoustics, and Thermal Environment and are delivered by a mixture of lectures and case studies.

### **GEOTECHNICAL ENGINEERING (CIVE320)**

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

This module introduces students to the theory and methods that underpin geotechnical engineering practice. It covers the design of shallow and deep foundations, retaining walls, slopes and other structures according to Eurocode 7. In addition, it provides a comprehensive introduction to modern finite element methods and their application to geotechnical engineering.

### **INDIVIDUAL PROJECT (ENGG341)**

**Credits: 30 / Semester: semester 2**

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

### **OLD STRUCTURES OF STEEL, TIMBER AND MASONRY (CIVE334)**

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

It has been shown that the refurbishment of existing buildings is a more sustainable option than demolition and reconstruction as it leads to significant reductions in CO<sub>2</sub> emissions. Additionally, the benefits of refurbishment (in comparison to new construction) extend beyond CO<sub>2</sub> emissions and reduced energy expenditure: (i) less raw materials, (ii) less waste, (iii) heritage conservation and community retention and finally, (iv) well restored structures have a high economic value. This module gives students an insight into the structural appraisal and reuse of existing structures.

### **STRUCTURES 3 (CIVE344)**

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

This module introduces students to plastic structural analysis. At the member level the principle and method for assessing the load carrying capacity of a section is discussed. Topics covered at the structural level include principle and method behind collapse mechanisms, determining collapse loads by incrementally increasing load magnitude (incremental load analysis), and by investigation of the final incipient collapse state (plastic limit state analysis). Implications on limit state design are also discussed.



## **EARTHQUAKE ENGINEERING (CIVE342)**

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

This module aims at introducing students to earthquake engineering. It acquaints students with basic skills for analyzing the seismic response of structures subjected to earthquake excitations using structural dynamics principles. Background knowledge in engineering seismology will be covered to provide a comprehensive perspective to the topic. Seismic design principles are also introduced to provide a sound understanding of the rationale behind seismic codes.

*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

Our research-led teaching ensures that we incorporate the latest advances in cutting-edge engineering research. As well as achieving a degree qualification, you will graduate as an industry-ready engineer who has both practical experience and highly desirable skills to the engineering industry.

Studying this course will expose you to maximum opportunities for career prospects, graduate opportunities, and student summer placements specifically during the annual engineering careers fair with 30 blue chip companies attending (including Jaguar Land Rover, Nestle, Toyota, JCB, British Army, United Utilities, ABB Ltd, Network Rail, BAE Systems and many more).

Typical routes/roles available to graduates:

- Work experience opportunities – placements during the summer or for a full academic year in leading engineering companies.
- Postgraduate opportunities – MSc or PhD level

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

*Graduate Outcomes, 2018-19.*

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# Fees and funding

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

## TUITION FEES

<b>UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)</b>	
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	£27,200
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.](#)

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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 includes a lab coat, safety boots, and a residential construction course.

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 that could help pay your tuition and living expenses.

We've set the country or region your qualifications are from as United Kingdom. [Change it here](#)

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### **RIGBY ENTERPRISE AWARD**

- [Home students](#)

[Are you a UK student with a household income of £25,000 or less? If you've participated in an eligible outreach programme, you could be eligible to apply for a Rigby Enterprise Award worth £5,000 per year for three years of your undergraduate degree.](#)

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### **THE LIVERPOOL BURSARY**

- [Home students](#)

[If you're a UK student joining an undergraduate degree and have a household income below £35,000, you could be eligible for a Liverpool Bursary worth up to £2,000 for each year of undergraduate study.](#)

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### **ASYLUM SEEKERS SCHOLARSHIP**

- [Home students](#)

[Apply for an Asylum Seekers Scholarship and you could have your tuition fees paid in full and receive help with study costs. You'll need to have applied for asylum in the UK, or be the dependant of an asylum seeker, and be joining an eligible undergraduate degree.](#)

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### **CARE LEAVERS' OPPORTUNITY BURSARY**

- [Home students](#)

[If you've spent 13 or more weeks in Local Authority care since age 14, you could be eligible for a bursary of £3,000 per year of study. You'll need to be a UK student joining an eligible undergraduate degree and be aged 28 or above on 1 September in the year you start.](#)

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### **COWRIE FOUNDATION SCHOLARSHIP**

- [Home students](#)

[Are you a UK student with a Black African or Caribbean heritage and a household income of £25,000 or less? You could be eligible to apply for a Cowrie Foundation Scholarship worth up to £8,000 for each year of undergraduate study.](#)

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### **ESTRANGED STUDENTS BURSARY**

- [Home students](#)

[If you're a UK student identified as estranged by Student Finance England \(or the equivalent UK funding body\), you could be eligible for a bursary of £1,000 for each year of undergraduate study.](#)

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## **GENESYS LIFE SCIENCES SCHOLARSHIP**

- [Home students](#)

[Joining a School of Biosciences degree and have a household income of less than £25,000? If you're a UK student, you could apply to receive £4,500 per year for three years of your undergraduate course.](#)

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## **GRADUATE ASSOCIATION HONG KONG & TUNG UNDERGRADUATE SCHOLARSHIPS**

- [International students](#)
- [Hong Kong](#)

[If you're an undergraduate student from Hong Kong who can demonstrate academic excellence, you may be eligible to apply for a scholarship worth £10,000 in partnership with the Tung Foundation.](#)

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## **NOLAN SCHOLARSHIPS**

- [Home students](#)

[Do you live in the Liverpool City Region with a household income of £25,000 or less? Did neither of your parents attend University? You could be eligible to apply for a Nolan Scholarship worth £5,000 per year for three years of undergraduate study.](#)

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## **ROLABOTIC SCHOLARSHIP**

- [Home students](#)

[Are you a UK student with a household income of £25,000 or less? Did neither of your parents attend University? You could be eligible to apply for a ROLABOTIC Scholarship worth £4,500 for each year of your undergraduate degree.](#)

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## **SPORT LIVERPOOL PERFORMANCE PROGRAMME**

- [Home and international students](#)

[Apply to receive tailored training support to enhance your sporting performance. Our athlete support package includes a range of benefits, from bespoke strength and conditioning training to physiotherapy sessions and one-to-one nutritional advice.](#)

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## **TECHNETIX BROADHURST ENGINEERING SCHOLARSHIP**

- [Home students](#)

[Joining a degree in the School of Electrical Engineering, Electronics and Computer Science? If you're a UK student with household income below £25,000, you could be eligible to apply for £5,000 a year for three years of study. Two awards will be available per academic year.](#)

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## **UNDERGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP**

- [International students](#)

[If you're a high-achieving international student starting an undergraduate degree with us from September 2024, you could be eligible to receive a fee discount of up to £5,000. You'll need to achieve grades equivalent to AAA in A levels and be joining a non-clinical degree.](#)



## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE EXCELLENCE**

### **SCHOLARSHIP**

- [International students](#)

[Completed a Foundation Certificate at University of Liverpool International College \(UoLIC\)? We're offering a £5,000 fee discount off the first year of undergraduate study to some of the highest achieving students joining one of our non-clinical degrees from UoLIC.](#)



## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE FIRST CLASS**

### **SCHOLARSHIP**

- [International students](#)

[We're offering a £1,000 fee discount for years 2 and 3 of undergraduate study to eligible students progressing from University of Liverpool International College. You'll need to be studying a non-clinical subject and get an average of 70% or above in year 1 of your degree.](#)



## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE IMPACT**

### **PROGRESSION SCHOLARSHIPS**

- [International students](#)

[If you're a University of Liverpool International College student awarded a Kaplan Impact Scholarship, we'll also consider you for an Impact Progression Scholarship. If selected, you'll receive a £3,000 fee discount off the first year of your undergraduate degree.](#)



## **YOUNG ADULT CARER'S (YAC) BURSARY**

- [Home students](#)

[If you're a young adult and a registered carer in the UK, you might be eligible for a £1,000 bursary for each year of study. You'll need to be aged 18-25 on 1 September in the year you start your undergraduate degree.](#)



# 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.</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 (4 year route including a Foundation Year at Carmel College)</a> BEng (Hons)</li></ul>
GCSE	4/C in English and 4/C in Mathematics
Subject requirements	<p>Mathematics</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 National Extended Certificate	Acceptable at grade Distinction* alongside BB at A level including A Level Mathematics.
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.

<b>Your qualification</b>	<b>Requirements</b> <a href="#">About our typical entry requirements</a>
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 at Higher Level Mathematics
Irish Leaving Certificate	H1,H1,H2,H2,H2,H3, including H2 in Higher Maths. We also require a minimum of H6 in Higher English or O3 in Ordinary English
Scottish Higher/Advanced Higher	Pass Scottish Advanced Highers with grades AAB including Mathematics
Welsh Baccalaureate Advanced	Acceptable at grade B alongside AA in A Levels including A Level Mathematics.
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	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.



## 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**