



BEng (Hons)

# Electrical and Electronic Engineering with a Year in Industry

UCAS code H605

## Entry requirements

A level: ABB

## Study mode

Full-time

## Duration

4 years

Apply by: **29 January 2025**

Starts on: **22 September 2025**

## About this course

Studying Electrical and Electronic Engineering allows you to specialise in subjects as diverse as power generation and transmission, and antennas and digital systems design, preparing you for an exciting career within the world of modern electronics.

## Introduction

Electrical engineering is not simply about the production and transmission of electrical energy, but also about how it is used. In both its transmission and usage there are significant and increasing challenges facing electrical engineers, many related to sustainability and the environment.

This programme is designed for students with an interest in communications engineering and associated electronics, covering a wide range of topics in electronic and communications engineering.

You will learn through the practical application of concepts and theory, always with awareness of their relevance to the real world.

This programme includes a placement year, during which you will spend time working in an engineering company. This is an excellent opportunity to gain practical

engineering experience.

Electrical and Electronic Engineering students graduate with skills sought after by a wide range of employers who are actively seeking engineers.

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## What you'll learn

- Practical problem-solving skills
  - Advanced skills in hardware and/or software design and implementation
  - Use of industry standard tools, technologies and working methods
  - How to take projects from conception through to design, implementation and operation
  - Solid training in both software and hardware information technology
  - How to put learning into practice through your Year in Industry
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## Accreditation

Accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer and partly meeting the academic requirement for registration as a Chartered Engineer.

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### Accreditation in detail

#### IET

IET are one of the world's leading professional societies for engineers and technicians and their accreditation covers a whole range of subjects including electrical, electronic, manufacturing, mechanical, systems and software engineering, as well as bioengineering, nanotechnology and renewable energy. It's recognised globally as an indicator of quality through the Washington and Sydney accords, which are governed by the International Engineering Alliance (IEA).

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# Course content

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

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## Year one

In your first year, module subjects covered range from digital electronics and electronics circuits, through to electromagnetism and electromechanics.

## Modules

Compulsory modules	Credits
<u><a href="#">DIGITAL &amp; INTEGRATED ELECTRONICS DESIGN (ELEC143)</a></u>	15
<u><a href="#">ELECTRICAL CIRCUITS &amp; SYSTEMS (ELEC142)</a></u>	15
<u><a href="#">ELECTROMAGNETISM &amp; ELECTROMECHANICS (ELEC120)</a></u>	15
<u><a href="#">ELECTRONIC CIRCUITS (ELEC104)</a></u>	15
<u><a href="#">ENGINEERING SKILLS (ELEC171)</a></u>	15
<u><a href="#">INTRODUCTION TO PROGRAMMING IN C (ELEC129)</a></u>	15
<u><a href="#">MATHEMATICS A FOR ELECTRICAL ENGINEERS (ELEC191)</a></u>	15
<u><a href="#">MATHEMATICS B FOR ELECTRICAL ENGINEERS (ELEC192)</a></u>	15

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

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## Year two

In your second year, a range of module subjects similar to those in your first year is covered.

## Modules

Compulsory modules	Credits
<u>CMOS INTEGRATED CIRCUITS (ELEC212)</u>	7.5
<u>COMMUNICATION SYSTEMS (ELEC202)</u>	7.5
<u>DIGITAL ELECTRONICS &amp; MICROPROCESSOR SYSTEMS (ELEC211)</u>	15
<u>ELECTRICAL CIRCUITS &amp; POWER SYSTEMS (ELEC209)</u>	15
<u>ELECTROMAGNETICS (ELEC210)</u>	7.5
<u>INSTRUMENTATION &amp; CONTROL (ELEC207)</u>	15
<u>FIELD THEORY AND PARTIAL DIFFERENTIAL EQUATIONS (MATH283)</u>	7.5
<u>SIGNALS AND SYSTEMS (ELEC270)</u>	15
<u>APPLIED DESIGN &amp; INDUSTRIAL AWARENESS (ELEC273)</u>	15
<u>AMPLIFIER CIRCUITS - DESIGN AND APPLICATIONS (ELEC219)</u>	15

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

## Year three

This is the placement year, during which you will spend time working in an engineering company.

Preparation for the placement is provided by the University's Careers and Employability Service, who will assist in finding a placement, creating a CV and

preparing you for interview. Placements can be near or far in the UK, Europe and China.

## Modules

Compulsory modules	Credits
<u>UG PLACEMENT IN YEAR3 (ELEC299)</u>	120

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

### Year four

In your final year, you will undertake a major individual project that is either linked to research work or has some industrial relevance.

Other modules are studied which reflect your personal interest, providing an opportunity either to focus on your preferred specialisation, or keep your options open with a broad range of subjects.

In addition to compulsory modules, you choose two from the indicative list of optional modules.

## Modules

Compulsory modules	Credits
<u>ENGINEERING MANAGEMENT &amp; ENTREPRENEURIAL SKILLS (ELEC352)</u>	7.5
<u>BENG PROJECT (ELEC340)</u>	30

Optional modules	Credits
<u>ADVANCED MODERN MANAGEMENT (MNGT352)</u>	7.5

Optional modules	Credits
<u>ANTENNAS (ELEC312)</u>	7.5
<u>APPLICATION DEVELOPMENT WITH C++ (ELEC362)</u>	15
<u>DIGITAL AND WIRELESS COMMUNICATIONS (ELEC377)</u>	15
<u>DIGITAL CONTROL AND OPTIMISATION (ELEC303)</u>	15
<u>DIGITAL SYSTEM DESIGN (ELEC373)</u>	15
<u>DRIVES (ELEC331)</u>	7.5
<u>ELECTROMAGNETIC COMPATIBILITY (ELEC382)</u>	7.5
<u>LOW POWER COMPUTER ARCHITECTURE (ELEC370)</u>	15
<u>IMAGE PROCESSING (ELEC319)</u>	7.5
<u>NEURAL NETWORKS (ELEC320)</u>	7.5
<u>PHOTONICS AND OPTICAL INFORMATION SYSTEMS (ELEC313)</u>	15
<u>RF ENGINEERING AND APPLIED ELECTROMAGNETICS (ELEC311)</u>	7.5
<u>SIGNAL PROCESSING AND DIGITAL FILTERING (ELEC309)</u>	15
<u>POWER SYSTEMS AND POWER ELECTRONICS (ELEC301)</u>	15
<u>PLASMA SYSTEM ENGINEERING (ELEC391)</u>	7.5
<u>INTEGRATED CIRCUITS - CONCEPTS AND DESIGN (ELEC372)</u>	15
<u>TRANSISTOR AMPLIFIERS AND DIFFERENTIAL CIRCUITS: THEORY AND DESIGN (ELEC371)</u>	15

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

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## Teaching and assessment

### How you'll learn

All programmes are taught over two semesters with examinations at the end of each semester. Modules vary from those which are assessed by examination only to others which are continuous assessment only. All programmes incorporate a substantial practical component, with an increasing emphasis on project work as you progress through to the final year. You can select your final year individual project in consultation with members of staff.

### How you're assessed

Assessment for this course is undertaken through a range of exams, coursework and projects.

### 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.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

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# Careers and employability

Graduates of this degree programme go on to a wide range of careers: you may be responsible for planning the electricity distribution network, or you may be designing the electronics of the next 'must have' item. It is an exciting time for the electronic and communications industry, with new and innovative products coming out every day.

Recent employers include:

- ARM Holdings Ltd
- British Nuclear Group
- Daresbury Laboratory
- Deva Electronic Controls
- Energetix Group PLC
- Ericsson Ltd
- Heap and Partners Ltd
- Logica CMG
- Marconi
- Ministry of Defence
- Royal Liverpool University Hospital (Clinical Engineering)
- Science and Technology Facilities Council
- Scottish Power
- Siemens UK
- The Highways Agency
- United Utilities PLC.

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# Fees and funding

Your tuition fees, how to pay, 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 - £9,535

Year in industry fee - £1,905

### International fees

Full-time place, per year - £29,100

Year in industry fee - £1,905

The tuition fees shown are correct for 2025/26 entry. Please note that the year abroad fee also applies to the year in China.

Tuition fees cover the cost of your teaching, assessment, operating University facilities such as libraries, IT equipment, and access to academic and personal support.

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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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# Entry requirements

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

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## A levels

ABB including Mathematics and a science subject (Chemistry, Computer Science, Further Mathematics, Physics or Electronics).

You may automatically qualify for reduced entry requirements through our contextual offers scheme. Based on your personal circumstances, you may automatically qualify for up to a two-grade reduction in the entry requirements needed for this course. When you apply, we consider a range of factors – such as where you live – to assess if you're eligible for a grade reduction. You don't have to make an application for a grade reduction – we'll do all the work.

Find out more about [how we make reduced grade offers](#).

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.

Available foundation years:

- [Engineering Foundation \(4 year route including a Foundation Year at Carmel College\)](#) BEng (Hons)

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## T levels

T levels are not currently accepted.

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## GCSE

4/C in English and 4/C in Mathematics

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## Subject requirements

For applicants from England: For science A Levels that include the separately graded practical endorsement, a Pass is required.

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## BTEC Level 3 National Extended Certificate

Distinction in BTEC (any subject) plus AB in A Levels.

A Levels must include Mathematics and a science subject (Chemistry, Computer Science, Further Mathematics, Physics or Electronics).

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### **BTEC Level 3 Diploma**

D\*D in a relevant BTEC considered alongside grade B in A Level Mathematics.

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### **BTEC Level 3 National Extended Diploma**

D\*D\*D in a relevant Diploma, including Distinction in 'Further Mathematics for Engineering Technicians' unit. Students will also be required to take an online Mathematics assessment, please contact the University for further information.

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### **International Baccalaureate**

33 overall, including 5 in Higher Level Mathematics and 5 in a Higher Level science subject.

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### **Irish Leaving Certificate**

H1, H2, H2, H2, H3, H3 including H2 or above in Mathematics and a science subject (Chemistry, Computer Science, Further Mathematics, Physics or Electronics).

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### **Scottish Higher/Advanced Higher**

ABB in Advanced Highers including Mathematics and a science subject (Chemistry, Computer Science, Further Mathematics, Physics or Electronics).

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### **Welsh Baccalaureate Advanced**

Accepted at grade B alongside A Level grades AB in Mathematics and a science subject (Chemistry, Computer Science, Further Mathematics, Physics or Electronics).

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### **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.

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### **Access**

Considered if taking a relevant subject. 42 Level 3 credits at Distinction, including 15 Level 3 credits in Mathematics is required. GCSE English and Mathematics grade C/4 or above also required. Students will be required to take an online Mathematics assessment, please contact the University for further information.

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### **International qualifications**

Select your country or region to view specific entry requirements.

Many countries have a different education system to that of the UK, meaning your qualifications may not meet our direct entry requirements. Although there is no direct Foundation Certificate route to this course, completing a Foundation Certificate, such as that offered by the University of Liverpool International College, can guarantee you a place on a number of similar courses which may interest you.

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## **English language requirements**

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

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### **IELTS**

6.0 overall, with no component below 5.5

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### **TOEFL iBT**

78 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking

19. TOEFL Home Edition not accepted.

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### **TOEFL Paper**

Grade 6 at Standard Level or grade 5 at Higher Level

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### **Duolingo English Test**

115 overall, with speaking, reading and writing not less than 105, and listening not below 100

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### **Pearson PTE Academic**

59 overall, with no component below 59

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### **LanguageCert Academic**

65 overall, with no skill below 60

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### **Cambridge IGCSE First Language English 0500**

Grade C overall, with a minimum of grade 2 in speaking and listening. Speaking and listening must be separately endorsed on the certificate.

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### **Cambridge IGCSE First Language English 0990**

Grade 4 overall, with Merit in speaking and listening

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### **Cambridge IGCSE Second Language English 0510/0511**

0510: Grade C overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0511: Grade C overall

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### **Cambridge IGCSE Second Language English 0993/0991**

0993: Grade 5 overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0991: Grade 5 overall

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### **Cambridge ESOL Level 2/3 Advanced**

169 overall, with no paper below 162

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### **LanguageCert**

## Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

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### Pre-sessional English in detail

If you don't meet our English language requirements, we can use your most recent IELTS score, or [the equivalent score in selected other English language tests](#), to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

Your most recent IELTS score	Pre-sessional English course length	On campus or online
5.5 overall, with no component below 5.5	6 weeks	On campus
5.5 overall, with no component below 5.0	10 weeks	On campus and online options available
5.0 overall, with no component below 5.0	12 weeks	On campus and online options available
5.0 overall, with no component below 4.5	20 weeks	On campus
4.5 overall, with no	30 weeks	On campus

Your most recent IELTS score	Pre-sessional English course length	On campus or online
component below 4.5		
4.0 overall, with no component below 4.0	40 weeks	On campus

If you've completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to [Pre-sessional English entry requirements](#) for IELTS 6.0 overall, with no component below 5.5, for further details.

## 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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