UNIVERSITY OF LIVERPOOL

MSc (Eng)

Renewable and Sustainable Energy with a Year in Industry

Entry requirements	Study mode	Duration
2.2 or equivalent in Engineering	Full-time	24 months

Apply by: **29 August 2025**
Starts on: **22 September 2025**

About this course

This programme provides you with an in-depth knowledge of renewable and sustainable energy generation, transmission, distribution and networks. We also explore the operating principles, monitoring, optimisation and control of modern power systems in detail.

Introduction

The world demand for renewable and sustainable energy, is increasing significantly and will continue to do so over the next decade and beyond. There are many global challenges to be addressed in order to meet this ever-increasing demand, and we need electrical and electronic engineers to provide key solutions.

There are significant opportunities for you to make an impact that will shape the future of our world, and this programme has been carefully designed with this in mind.

Developed with industry partners, this master's course addresses environmental challenges, renewable energy generation, smart grid, high voltage power engineering, and research and management skills. In addition, you will experience site visits and practical sessions.

This two-year course with a year in industry shares the same modules as it's one equivalent programme without a year in industry. The year in industry placement will

give you an in-depth workplace experience where you can develop your skills and apply your learning. It’s a great way to gain insight into potential career options and start building your professional network. Completing this programme with a year in industry usually takes two years, with the placement typically running for 30 weeks from September of year one to June of year two.

Who is this course for?

This MSc is for graduates with a good degree in an electrical/electronic or engineering related subject. Our programme has been carefully developed for those wanting to make a meaningful impact in the fight against climate change, whilst meeting the increasing demands on the energy and power industry.

What you'll learn

- You will develop the knowledge, skills and competencies (as defined by UK-SPEC) needed to pursue a successful professional career in energy and power systems engineering that meet the needs of industry and society
- You will gain a sound understanding of energy and power systems principles, broad knowledge of technical and non-technical subjects and skills to practice energy and power systems engineering and develop your career to any scientific, technical or managerial level worldwide
- You will attain a level of competence and experience that satisfy the academic requirements for a Chartered Engineer (CEng). Please note: this course is pending accreditation.

Accreditation

This programme is pending accreditation by the Institution of Engineering and Technology on behalf of the Engineering Council as meeting the requirements for Further Learning for registration as a Chartered Engineer. Candidates must hold a CEng accredited BEng/BSc (Hons) undergraduate first degree to comply with full CEng registration requirements

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).

Back to top

Course content

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

Year one

Semester one

In your first semester, compulsory modules will introduce you to a range of electrical machines using the concepts of rotating magnetic fields, popular programming languages such as C++ and MATLAB, and the dynamic behaviour of power systems.

You'll learn the research skills you'll need to complete your final project – along with an understanding of measurement and monitoring and the sensors that are used in power systems and design techniques for digital and embedded computer systems.

Optional modules will allow you to explore the principles of communications networks, protocols and security mechanisms, the concepts of electrical plasmas and how they are used in industry, and advanced modelling, simulation and control techniques to develop your problem-solving skills.

Semester two

Your compulsory modules will present methods for analysing power electronic converters suitable for AC:DC, DC:DC, and DC:AC electrical energy conversion and develop a good understanding of different renewable energy sources and the principle of energy conversion from renewable sources into electricity. You'll also learn the theories, principles and test methods in relation to the operation of high-voltage power networks and electrical apparatuses.

You'll continue to develop your research skills ahead of your final project in the summer, as well as gain more in-depth knowledge of monitoring systems, sensors, processors, and system design.

With optional modules, you can be introduced to the principles of communications networks, their components and protocols or develop an understanding of electromagnetic compatibility (EMC), the scope of EMC, standards, typical EMC problems and solutions.

You'll study eight compulsory modules in year one and choose 15 credits of optional modules. Your optional module choice could take the form of two 7.5-credit modules or one 15-credit module.

Modules

Compulsory modules	Credits
MEASUREMENT, MONITORING AND SENSORS (ELEC421)	15
RESEARCH SKILLS & PROJECT MANAGEMENT (ELEC483)	15
DRIVES (ELEC331)	7.5
ENGINEERING PROGRAMMING (ELEC431)	15
POWER SYSTEMS ANALYSIS & DYNAMICS (ELEC402)	15
ADVANCED POWER ELECTRONICS (ELEC433)	7.5
HIGH VOLTAGE ENGINEERING (ELEC407)	15
RENEWABLE ENERGY & SMART GRID (ELEC435)	15
MOBILE COMMUNICATIONS AND SECURITY (ELEC463)	15

Optional modules	Credits
ADVANCED LOW POWER COMPUTER ARCHITECTURE (ELEC470)	15
DIGITAL SYSTEM DESIGN (ELEC473)	15
IMAGE PROCESSING (ELEC319)	7.5
ADVANCED SYSTEMS MODELLING & CONTROL (ELEC476)	15
PLASMA SYSTEM ENGINEERING (ELEC391)	7.5
COMMUNICATIONS NETWORKS (ELEC461)	15

Optional modules	Credits
ELECTROMAGNETIC COMPATIBILITY (ELEC382)	7.5
DIGITAL AND WIRELESS COMMUNICATIONS (ELEC477)	15

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

Year two

The main aim of this module is for you to undertake a research project in a real-world environment successfully. The module will be assessed by an interim report, oral presentation and final thesis. You will be supervised by a university supervisor as well as an industrial supervisor.

This module aims to develop your ability to undertake an industrial project in a real-world environment successfully with limited supervision. You will be expected to apply the knowledge learned from the university in practice and also expected to gain significant knowledge and skills from the industry, thus your employability should be much enhanced.

The aims of the project are:

- for you to plan, carry out and control a research project at the forefront of their academic discipline, field of study or area of professional practice, undertake research or investigative work in professional engineering.
- gain a comprehensive understanding of the techniques applicable to research or advanced scholarship in their field of study to make an original contribution to knowledge.
- to report and present findings and work in both writing and oral presentation.
- to gain industrial experience and enhance employability.

ELEC499 MSc Industrial Project and ELEC498 MSc Placement Experience are completed across the duration of year two.

Modules

Compulsory modules	Credits
MSC PLACEMENT EXPERIENCE (ELEC498)	60
MSC INDUSTRIAL PROJECT (ELEC499)	60

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

Teaching and assessment

How you'll learn

The first year of the programme is taught through a mixture of formal lectures, tutorials, practical laboratory sessions, guided reading, student-centred learning and project work. Many of the modules require you to develop your skills through independent learning.

In your second year, you'll undertake an industrial project in a real-world environment.

How you're assessed

Modules in the first year of the course are assessed through a combination of examinations and coursework. a combination of examinations and coursework. The examinations take place at the end of each semester and typically take the form of an in-person written assignment, usually to be completed in a couple of hours. You'll be assigned coursework across the length of each semester. This typically takes the form of marked laboratory reports, assignments, essays, class tests and presentations.

The second year of the course is assessed through a portfolio of evidence from your industrial placement and a major project undertaken in your placement setting.

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.

Back to top

Careers and employability

This programme will provide you with an excellent base for students considering a career in the renewable and sustainable energy industry.

The University of Liverpool is one of the most targeted universities by top employers, according to **The Graduate Market 2024, High Fliers Research**. This means our graduates are in demand for employment and sought after by top employers worldwide.

Qualifying with a Renewable and Sustainable Energy MSc degree from Liverpool will equip you with the knowledge, skills and confidence to explore a vast range of opportunities across the globe, in leading companies at the forefront of technology. Some of our graduates have gone on to work for companies such as:

- National Grid
- Scottish Power
- State Grid (China).

Others have continued to study for a PhD programme.

Career support from day one to graduation and beyond

Career planning

From education to employment

Networking events

Back to top

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 - £13,300
Year in industry fee - £2,700

International fees

Full-time place, per year - £29,900
Year in industry fee - £6,000

Fees stated are for the 2025-26 academic year.

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

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **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 could include buying a laptop, books, or stationery.

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

Back to top

Entry requirements

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

Postgraduate entry requirements

We accept a 2:2 honours degree from a UK university, or an equivalent academic qualification from a similar non-UK institution. This degree should be in a relevant subject, for example Electrical Engineering and Electronics.

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 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.

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.

IELTS

6.5 overall, with no component below 5.5

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.

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
6.0 overall, with no component below 5.5	6 weeks	On campus
5.5 overall, with no component below 5.5	10 weeks	On campus and online options available
5.5 overall, with no more than one component below 5.5, and no component below 5.0	12 weeks	On campus and online options available
5.5 overall, with no component below 4.5	20 weeks	On campus
5.0 overall, with no component below 4.5	30 weeks	On campus

Your most recent IELTS score	Pre-sessional English course length	On campus or online
4.5 overall, with no more than one component below 4.5, and 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 6.5 overall, with no component below 5.5, for further details.

Back to top