UNIVERSITY OF LIVERPOOL

MSc (Eng)

Cyber Security and Communications Engineering

Entry requirements	Study mode	Duration
2.2 or equivalent in Engineering	Full-time	12 months

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

About this course

Place yourself at the forefront of modern communications engineering on this MSc. We'll combine theory and practice as we immerse you in all aspects of digital and wireless communications, cyber security, key programming languages and advanced signal processing techniques.

Introduction

Graduates with expertise in telecommunications are highly sought after in industry. On this MSc, you'll combine theory and practice to discover the existing and emerging technologies driving rapid advances in telecommunications and wireless systems.

We'll introduce you to the components of communication networks, examine the fundamentals of radio frequency engineering, and show you how to design and develop digital and wireless communication systems.

Gaining knowledge of the programming languages C++ and MATLAB, you'll receive a grounding in advanced signal processing techniques and learn how to use industry standard software.

We'll explore the principles, components and protocols of communication networks and analyse the mechanisms, models and characteristics of radio signal

transmission in wireless systems. An introduction to information theory will additionally familiarise you with source coding techniques.

Further opportunities to specialise are available through optional modules. These cover mobile communications and security, microelectronics, electromagnetics, antennas, image processing and advanced systems.

The programme culminates with an independent research project. We'll provide a thorough grounding in how to plan and conduct research and hone your project management skills to prepare you for investigating an area of cyber security and communications engineering of your choice.

Please note: We constantly review and develop our postgraduate programmes. This MSc is also available with the alternative title Telecommunications and Wireless Systems MSc for entry September 2025, and gives students the option to graduate with either of these two MSc titles.

Who is this course for?

This MSc is for graduates with a good degree in an electrical/electronic or engineering related subject.

What you'll learn

- Advanced signal processing techniques
- Principles, protocols and components of communications networks, including network security
- How to design and code software for engineering applications using the programming languages C++ and MATLAB
- Research and project management skills
- Mechanisms, models and characteristics of radio signal transmission in wireless systems
- How to design and simulate a wireless communication system using industrial standard software
- The fundamentals of radio frequency engineering
- How to design and develop advanced digital and wireless communication systems

- Source coding techniques
- Principles, protocols and security mechanisms of mobile communications networks
- High frequency electromagnetics and circuit design techniques

Accreditation

This course 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).

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Course content

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

Semester one

You'll study eight compulsory modules across semesters one and two. Modules ELEC474 Advanced Signal Processing, ELEC483 Research Skills and Project Management and ELEC462 Wireless Systems and CAD Designs span both semesters.

15 credits of optional modules are also selected across the two semesters. This could take the form of two 7.5-credit modules or one 15-credit module.

Modules

Compulsory modules	Credits
ENGINEERING PROGRAMMING (ELEC431)	15
DIGITAL AND WIRELESS COMMUNICATIONS (ELEC477)	15
ADVANCED SIGNAL PROCESSING (ELEC474)	15
RESEARCH SKILLS & PROJECT MANAGEMENT (ELEC483)	15
WIRELESS SYSTEMS AND CAD DESIGNS (ELEC462)	15

Optional modules	Credits
ADVANCED LOW POWER COMPUTER ARCHITECTURE (ELEC470)	15
INTEGRATED CIRCUITS - CONCEPTS AND DESIGN (ELEC472)	15
IMAGE PROCESSING (ELEC319)	7.5

Optional modules	Credits
ADVANCED SYSTEMS MODELLING & CONTROL (ELEC476)	15
PHOTONICS AND OPTICAL INFORMATION SYSTEMS (ELEC313)	15
PLASMA SYSTEM ENGINEERING (ELEC391)	7.5
RF ENGINEERING AND APPLIED ELECTROMAGNETICS (ELEC311)	7.5

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

Semester two

You'll study eight compulsory modules across semesters one and two. Modules ELEC474 Advanced Signal Processing, ELEC483 Research Skills & Project Management and ELEC462 Wireless Systems and CAD Designs span both semesters.

15 credits of optional modules are also selected across the two semesters. This could take the form of two 7.5-credit modules or one 15-credit module.

Modules

Compulsory modules	Credits
COMMUNICATIONS NETWORKS (ELEC461)	15
INFORMATION THEORY AND CODING (ELEC415)	7.5
RADIO PROPAGATION FOR WIRELESS SYSTEMS (ELEC411)	7.5
ADVANCED SIGNAL PROCESSING (ELEC474)	15
RESEARCH SKILLS & PROJECT MANAGEMENT (ELEC483)	15

Compulsory modules	Credits
WIRELESS SYSTEMS AND CAD DESIGNS (ELEC462)	15

Optional modules	Credits
ANTENNAS (ELEC312)	7.5
ELECTROMAGNETIC COMPATIBILITY (ELEC382)	7.5
MOBILE COMMUNICATIONS AND SECURITY (ELEC463)	15

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

Final project

The dissertation project is completed over the summer.

Modules

Compulsory modules	Credits
MSC PROJECT (ELEC460)	60

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

Teaching and assessment

How you'll learn

This 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.

At the end of the year, you'll complete a major individual research project under expert supervision.

How you're assessed

Modules are assessed through 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.

Your dissertation is assessed through a combination of written reports and a presentation of your achievements.

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

Whether you're looking to secure a position in cyber security, communications engineering or wireless networking engineering, and whether you want to focus on design, development, research, manufacturing, maintenance or consultancy, you'll be able to demonstrate the expertise needed for a variety of roles with engineering companies of all sizes.

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 Cyber Security and Communications Engineering 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. Upon graduating, you will be ready to pursue a career involving:

- Design and development of communication networks
- Maintenance and upgrading of existing telecommunications infrastructure
- Internet of Things (IoT)
- Wireless communications and networking
- Cyber security.

Some of our graduates have gone on to work for companies such as:

- Huawei
- EE
- Imagination Technologies.

The analytical, communication and IT skills you develop will also prepare you for a variety of non-engineering positions, as well as potential PhD study.

Career support from day one to graduation and beyond

Career planning

From education to employment

Networking events

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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

International fees

Full-time place, per year - £29,900

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.

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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 related subject, such as 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.

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