UNIVERSITY OF LIVERPOOL

MSc

Data Science and Artificial Intelligence

Study mode	Duration	
Full-time	12 months	Apply by: **29 August 2025** Starts on: **22 September 2025**

About this course

This conversion MSc introduces graduates without a computer science related degree to Data Science and AI principles, with a thorough grounding in mathematics and statistics, data mining, artificial intelligence and the fundamentals of programming, to enable you to develop a toolkit of skills in data science and emerging technologies.

Introduction

With organisations increasingly reliant on data science and artificial intelligence (AI), understanding how to analyse, validate and interpret data can significantly enhance your employability.

If you're a graduate in a subject that's not related to computer science, this conversion MSc will complement your first degree and prepare you to meet the high demand for professionals in data science and AI technologies.

With the roots of data science embedded in mathematics, we'll start by introducing you to linear algebra, differential calculus, probability theory and statistics. This will prepare you for working with data mining algorithms and experimenting using real-world data.

You'll receive an overview of how to design and create software, including an intensive introduction to programming, and explore key topics in AI. We'll also provide a thorough grounding in how to plan and conduct research in preparation for your dissertation.

Further opportunities to specialise and enhance your knowledge of big data, web programming, bio-inspired algorithms and modern information systems are available through a range of optional modules.

Who is this course for?

This is a conversion MSc, designed for those without a computer science related degree, who are seeking to develop their maths skills and their knowledge and technical expertise in the areas of Data Science and AI. If you do have a Computer Science related degree, you may want to consider applying for the Advanced Data Science and Artificial Intelligence MSc.

Which postgraduate degree is right for you?

The Department of Computer Science offers master's programmes for students with undergraduate degrees in Computer Science and other disciplines.

If you have a Computer Science related degree, you could be eligible for the following master's courses:

- Advanced Computer Science MSc
- Advanced Computer Science with a Year in Industry MSc
- Advanced Data Science and Artificial Intelligence MSc
- Advanced Data Science and Artificial Intelligence with a Year in Industry MSc
- Theoretical Computer Science MSc
- Theoretical Computer Science with a Year in Industry MSc
- Cyber Security MSc.

Computer Science related degrees may include degree titles such as: Computer Applications, Computer Science, Computer Engineering, Computer Applications and Engineering, and Software Engineering. Please note that this list is not exhaustive. Any Computer Science related degree should contain a significant amount of computer science related modules to be relevant (as assessed by the Department of Computer Science).

If you don't have a Computer Science related degree and you are interested in learning more about the field, you may be eligible to study:

- Data Science and Artificial Intelligence MSc
- Data Science and Artificial Intelligence with a Year in Industry MSc
- Computer Science MSc

- Computer Science with a Year in Industry MSc
- Cyber Security MSc.

Please check individual course pages for detailed entry requirements.

What you'll learn

- How to design and create software using a modern programming language
- Essential mathematical concepts and techniques in linear algebra, differential calculus, probability theory and statistics
- Key topics in artificial intelligence, including machine learning, deep learning, natural language processing (NLP) and computer vision
- How to develop web applications
- The role of artificial intelligence in communication
- Data mining techniques and challenges using real-world datasets
- Application of visualisation methods to data mining
- Research skills in computer science
- Bio-inspired algorithms for optimisation and machine learning
- How big data is collected and used in modern society
- The role of structured query language, SQL, in information systems.

Accreditation

This course is pending accreditation by BCS, The Chartered Institute for IT.

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Course content

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

September start

This course consists of five compulsory modules, four optional modules and a research project.

The course is available to start in September or January. If you choose to start in September, you'll undertake taught modules from September to May. This will be followed by your research project over the summer.

Modules

Compulsory modules	Credits
MSC PROJECT (COMP702)	60
PROGRAMMING FUNDAMENTALS (COMP517)	15
RESEARCH METHODS IN COMPUTER SCIENCE (COMP516)	15
MATHS AND STATISTICS FOR AI AND DATA SCIENCE (COMP533)	15
APPLIED ARTIFICIAL INTELLIGENCE (COMP534)	15

Optional modules	Credits
DATABASE AND INFORMATION SYSTEMS (COMP518)	15
BIG DATA AND SOCIETY: FOUNDATIONS, POLITICS, AND POLICY B (COMM752)	15

Optional modules	Credits
DATA MINING AND VISUALISATION (COMP527)	15
WEB PROGRAMMING (COMP519)	15
MSC GROUP PROJECT (COMP530)	15
MACHINE LEARNING AND BIOINSPIRED OPTIMISATION (COMP532)	15
COMPUTATIONAL INTELLIGENCE (COMP575)	15
ARTIFICIAL INTELLIGENCE AND COMMUNICATION B (COMM718)	15
BIG DATA AND SOCIETY: ALGORITHMS AND PLATFORMS B (COMM754)	15

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

January start

This course consists of five compulsory modules, four optional modules and a research project.

The course is available to start in September or January. If you choose to start in January, you'll undertake taught modules from January to May. This will be followed by your research project over the summer and then your final set of taught modules from September to January. On successful completion of the course, following a January start, you can expect to graduate at our summer graduation ceremonies.

Modules

Compulsory modules	Credits
RESEARCH METHODS IN COMPUTER SCIENCE (COMP616)	15

Compulsory modules	Credits
PROGRAMMING FUNDAMENTALS (COMP617)	15
MATHS AND STATISTICS FOR AI AND DATA SCIENCE (COMP633)	15
APPLIED ARTIFICIAL INTELLIGENCE (COMP634)	15
MSC PROJECT (COMP702)	60

Optional modules	Credits
ARTIFICIAL INTELLIGENCE AND COMMUNICATION B (COMM718)	15
MSC GROUP PROJECT (COMP530)	15
WEB MAPPING AND GEOVISUALISATION (ENVS456)	15
DATABASE AND INFORMATION SYSTEMS (COMP518)	15
BIG DATA AND SOCIETY: FOUNDATIONS, POLITICS, AND POLICY B (COMM752)	15
BIOCOMPUTATION (COMP305)	15
GEOGRAPHIC DATA SCIENCE (ENVS563)	15

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

Teaching and assessment

How you'll learn

Teaching on this programme comprises formal lectures, small group tutorials and practical sessions in computer laboratories. You will also take part in one or more

group projects. 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 class tests, programming assignments or small projects.

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

Data science and artificial intelligence driven technologies are becoming integral parts of our lives and changing the ways people do business.

Nearly every organisation uses data science and artificial intelligence to refine and streamline their business practices. The significant opportunities afforded by the application of data science and artificial intelligence across so many different sectors, from IT and healthcare to government agencies, mean that professionals in this area are in high demand, with job opportunities far outstripping supply.

This MSc addresses this skills gap by preparing you for an exciting career in data science and artificial intelligence. This includes interdisciplinary opportunities tailored to your individual expertise, achieved by coupling knowledge of data science and artificial intelligence with the knowledge that you acquired from your first degree.

You'll be well placed on graduation to secure a variety of roles, including:

- Data analyst
- Data scientist
- Data engineer
- Database manager or administrator
- Machine learning practitioner
- Data architect
- Statistician
- Business analyst
- IT consultant.

Your expertise working with data will also provide ideal preparation for potential PhD study.

In the UK, graduate schemes in data analysis and business intelligence at larger companies tend to offer a starting salary of around £30,000.

Salaries for data analysts are typically between £30,000 and £40,000.

Experienced, high-level and consulting jobs can attract salaries of £60,000 or more.

source: Prospects, Sept 2024

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 - £30,800

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 subject that's not related to computer science.

Students on this conversion programme come from various academic backgrounds, therefore we strongly recommend that you review the pre-reading for the topics being introduced, to help prepare for studying this MSc.

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

TOEFL iBT

88 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking 19. TOEFL Home Edition not accepted.

Duolingo English Test

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

Pearson PTE Academic

61 overall, with no component below 59

LanguageCert Academic

70 overall, with no skill below 60

PSI Skills for English

B2 Pass with Merit overall and no band below B2 Pass

INDIA Standard XII

National Curriculum (CBSE/ISC) - 75% and above in English. Accepted State Boards - 80% and above in English.

WAEC

C6 or above

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
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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