

Data Science and Artificial Intelligence with a Year in Industry ^{MSc}

COURSE DETAILS

- Full-time: 24 months

KEY DATES

- Apply by: [29 August 2025](#)
 - Starts: 22 September 2025
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Course overview

Discover how tech companies gather and use data and explore both the databases that power our daily lives and the data languages underpinning them on this MSc. You'll receive a thorough grounding in mathematics and statistics, data mining, artificial intelligence and the fundamentals of programming, then go on to complete an extended industrial placement in a real-world environment.

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 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 year one 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.

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.

In year two, you'll undertake an industrial project in a real-world environment as part of an extended placement opportunity.

WHO IS THIS COURSE FOR?

This MSc is suitable if your first degree was in a subject not related to computer science and you are seeking career opportunities in data science and artificial intelligence.

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.

Course content

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

YEAR ONE

You'll study five compulsory modules and three optional modules in year one.

COMPULSORY MODULES

RESEARCH METHODS IN COMPUTER SCIENCE (COMP516)

Credits: 15 / Semester: semester 1

In this module the students will learn and practise all the necessary skills needed to conduct independent research in computer science, including literature search, project management, presentation techniques, peer reviewing, writing skills and critical review of texts. They will also learn about the professional, legal, social and ethical framework of the IT industry. The module covers, e.g., planning and scheduling projects and drawing Gantt charts. Students shall also conduct a research project (including research, paper, literature review, or MSc project proposal, ...) and use tools like EndNote and Zotero bibliography manager within MS Word and Latex.

PROGRAMMING FUNDAMENTALS (COMP517)

Credits: 15 / Semester: semester 1

The aim of COMP517 is to help you to learn how to design and create software. Central to this will be an understanding of and practical experience with a modern programming language, but you will also be made aware of the importance of using sound software engineering techniques to develop high quality programs. As with many endeavours (swimming, chess-playing, story-writing) programming is a skill that must be learned and improved upon by constant practice. In this module, therefore, the emphasis will be on self-study. Although lectures will be used to introduce the various topics, you will be expected to spend the majority of your time attempting numerous exercises and completing the specified assignments.

MATHS AND STATISTICS FOR AI AND DATA SCIENCE (COMP533)

Credits: 15 / Semester: semester 1

Computer Science in general, and data Science in particular, has its roots in Mathematics. This module is designed to bring you up to speed with the necessary mathematical and statistical underpinning required to study Data Science and AI.

APPLIED ARTIFICIAL INTELLIGENCE (COMP534)

Credits: 15 / Semester: semester 2

This module gives an introduction to key areas of Artificial Intelligence (AI), including Machine Learning, Deep Learning, Natural Language Processing (NLP) and Computer Vision. It discusses fundamental problems in these areas and covers common methods to solve them.

Students will develop the practical skills necessary to build AI applications using data from different domains.

OPTIONAL MODULES

DATABASE AND INFORMATION SYSTEMS (COMP518)

Credits: 15 / Semester: semester 1

This module focuses on how databases are used in modern information systems. They are at the heart of almost all systems, such as supermarket checkouts, online banking, home rentals, and much more. One of the most successful data definition and manipulation languages is SQL, which will be covered in detail. The module will also introduce some of the fundamental concepts in computer science, as well as the mathematical underpinnings of relational databases and the techniques used to support concurrency and reliability in large information systems.

BIG DATA AND SOCIETY: FOUNDATIONS, POLITICS, AND POLICY B (COMM752)

Credits: 15 / Semester: semester 1

This module will be of particular interest to students interested in big data and how it is collected and used in modern society; in the politics and policy questions around social media; and in the interactions between media, platforms, and citizens. It will introduce students to the study of online media and platforms, with a particular focus on 'big' social trace data. As well as developing their understanding of how Internet-based media systems work, students will learn about the strengths and weaknesses of using big data for social science research, and engage with key online political communication policy questions.

WEB PROGRAMMING (COMP519)

Credits: 15 / Semester: semester 2

Masters level introductory web programming module covering such topics as HTML, Cascading Style Sheets, CGI programming, and PHP/SQL programming.

ARTIFICIAL INTELLIGENCE AND COMMUNICATION B (COMM718)

Credits: 15 / Semester: semester 2

This module will provide students with skills to understand, analyse and master the role played by Artificial Intelligence in Communication. It will introduce students to core notions to identify what components of our daily communication practices are affected by AI, how the reshaping of the communication processes happens through different technologies and how we can check their evolutions being aware of their potential risks and opportunities. At the end of the module students will be able to answer questions such as: who are we communicating with when we write online? How are (chat)bots and conversational agents changing our interactions? Why social and new digital media are affecting news consumption habits? The module will be taught following "active learning" methodologies.

MACHINE LEARNING AND BIOINSPIRED OPTIMISATION (COMP532)

Credits: 15 / Semester: semester 2

This module teaches you about bio-inspired algorithms for optimisation and machine learning. The algorithms are based on reinforcement learning, DNA computing, brain or neural network models, immune systems, the evolutionary version of game theory, and social insect swarm behaviour such as ant colonies and bee colonies. These techniques are extremely useful for searching very large solution spaces (optimisation) and they can be used to design agents or robots that have to interact and operate in dynamic unknown environments (e.g. a Mars rover, a swarm of robots or network of satellites). The idea of learning optimal behaviour, rather than designing, algorithms and controllers is especially appealing in AI.

COMPUTATIONAL INTELLIGENCE (COMP575)

Credits: 15 / Semester: semester 2

Biologically inspired optimisation and introduction to neural networks for artificial intelligence.

DATA MINING AND VISUALISATION (COMP527)

Credits: 15 / Semester: semester 2

The module covers a range of topics and techniques for analyzing data. Students will learn about different types of data mining problems, including classification, clustering, association pattern mining, and social network analysis, as well as algorithms to solve them.

Students will program selected data mining algorithms from scratch using Python. This hands-on approach will allow them to gain a deeper understanding of how the algorithms work and how they can be applied to real-world datasets. They will experiment with different datasets to see how the algorithms perform and learn how to interpret the results.

Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.

YEAR TWO

COMP599 MSc Industrial Project and COMP598 MSc Placement Experience are completed across the duration of year two.

COMPULSORY MODULES

MSC PLACEMENT EXPERIENCE (COMP598)

Credits: 60 / Semester: whole session

This module contains the elements of the Computer Science PGT programmes with a second year industrial placement for the 2 year MSc programmes that are generic to all underlying work experience. The technical elements of the placement are contained in a different module, which is COMP599 MSc Industrial Project.

MSC INDUSTRIAL PROJECT (COMP599)

Credits: 60 / Semester: whole session

This module is a major part of the 2 year MSc programmes with a year in industry. It is worth 60 credits. The project takes place in the year 2 during the placement period, typically from September to the following May for a minimum of 26 weeks. An earlier starting date is allowed, but subject to agreement between the University and the placement provider. The module will be assessed by means of: An interim report, An oral presentation, and A final dissertation. The student will be supervised by a university academic as well as an industrial supervisor. This module is aimed at developing the student's ability to undertake an industrial project in a real world environment successfully and with limited supervision. The student is expected to apply the knowledge acquired from the taught components of the programme and to gain significant knowledge and skills in industry. As a consequence, the expectation is that students' employability prospects will be greatly enhanced.

Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.

HOW YOU'LL LEARN

Teaching on the first year of 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. 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. 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.

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.

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.

Career support from day one to graduation and beyond

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Career planning

[Our Careers Studio and career coaches can provide tailored support for your future plans.](#)

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From education to employment

Employability in your curriculum for a successful transition

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Networking events

[Make meaningful connections with like-minded professionals](#)

YOUR FUTURE

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

87% OF COMPUTER SCIENCE STUDENTS FIND THEIR MAIN ACTIVITY AFTER GRADUATION MEANINGFUL.

Graduate Outcomes, 2018-19.

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	£30,800
Year in industry fee	£6,200

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 fees and funding](#).

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.

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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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – ACHIEVEMENT

◦ [International students](#)

[If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your prior academic achievement, choice of course, and you not having studied with us before.](#)

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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – COUNTRY

◦ [International students](#)

◦ [Antigua and Barbuda](#)

◦ [Australia](#)

◦ [Bangladesh](#)

◦ [Barbados](#)

◦ [Belize](#)

◦ [Brunei](#)

◦ [Canada](#)

◦ [China](#)

◦ [Cyprus](#)

◦ [Dominica](#)

◦ [Egypt](#)

◦ [Ghana](#)

◦ [Grenada](#)

◦ [Guyana](#)

◦ [India](#)

◦ [Jamaica](#)

◦ [Japan](#)

◦ [Kenya](#)

◦ [Malaysia](#)

◦ [Mauritius](#)

◦ [Mexico](#)

◦ [New Zealand](#)

◦ [Nigeria](#)

◦ [Pakistan](#)

◦ [Saint Kitts and Nevis](#)

◦ [Saint Lucia](#)

◦ [Saint Vincent and The Grenadines](#)

- [Singapore](#)
- [South Africa](#)
- [South Korea](#)
- [Sri Lanka](#)
- [Tanzania](#)
- [Thailand](#)
- [Trinidad and Tobago](#)
- [Turkey](#)
- [Uganda](#)
- [Vietnam](#)

[If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your nationality, choice of course, and you not having studied with us before.](#)

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GRADUATE LOYALTY ADVANCEMENT SCHOLARSHIP

- [Home and international students](#)

[If you're a University of Liverpool graduate starting this master's degree with us, you could be eligible to receive a loyalty discount of up to £2,500 off your master's tuition fees.](#)

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CHILEAN NATIONAL AGENCY FOR RESEARCH AND DEVELOPMENT (ANID) SCHOLARSHIP

- [International students](#)
- [Chile](#)

[If you're a Chilean student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Chilean National Agency for Research and Development \(ANID\) Scholarship. Scholarship.](#)

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BRACKEN DATA SCIENCE SCHOLARSHIP

- [Home students](#)

[Studying a data science master's in the School of Electrical Engineering, Electronics and Computer Science? If you live in the Liverpool City Region, with household income below £25,000, you could be eligible to apply for £5,000. One award is available per academic year.](#)

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CHEVENING SCHOLARSHIPS

- [International students](#)
- [Albania](#)
- [Algeria](#)
- [Anguilla](#)
- [Antigua and Barbuda](#)
- [Argentina](#)
- [Australia](#)
- [Azerbaijan](#)
- [Bangladesh](#)

- [Barbados](#)
- [Belize](#)
- [Bolivia](#)
- [Brazil](#)
- [British Virgin Islands](#)
- [Brunei](#)
- [Canada](#)
- [Cayman Islands](#)
- [Chile](#)
- [China](#)
- [Columbia](#)
- [Costa Rica](#)
- [Cuba](#)
- [Dominica](#)
- [Ecuador](#)
- [Egypt](#)
- [El Salvador](#)
- [Ghana](#)
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- [Honduras](#)
- [Hong Kong](#)
- [Iceland](#)
- [India](#)
- [Indonesia](#)
- [Iraq](#)
- [Jamaica](#)
- [Japan](#)
- [Jordan](#)
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- [Montserrat](#)
- [Morocco](#)
- [Nepal](#)
- [New Zealand](#)
- [Nicaragua](#)
- [Nigeria](#)
- [Pakistan](#)
- [Panama](#)
- [Paraguay](#)
- [Peru](#)
- [Philippines](#)

- [Russia](#)
- [Saint Kitts and Nevis](#)
- [Saint Lucia](#)
- [Saint Vincent and The Grenadines](#)
- [Serbia](#)
- [Singapore](#)
- [South Africa](#)
- [South Korea](#)
- [South Sudan](#)
- [Sri Lanka](#)
- [Sudan](#)
- [Taiwan](#)
- [Tanzania](#)
- [Thailand](#)
- [Trinidad and Tobago](#)
- [Turkey](#)
- [Turks and Caicos Islands](#)
- [Uganda](#)
- [Ukraine](#)
- [Uruguay](#)
- [Venezuela](#)
- [Vietnam](#)
- [Zimbabwe](#)

[If you're an international student from an eligible country, joining a one-year master's course, you could be eligible to apply for a Chevening Scholarship. If your application is successful, you could expect to have your master's fees paid, up to a maximum of £18,000, and receive additional help with living costs.](#)

CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA (CONACYT) AWARD

- [International students](#)
- [Mexico](#)

[If you're a Mexican student joining a master's degree, you could be eligible to apply for a 30% discount on your tuition fees with a CONACyT Award.](#)

FUND FOR THE DEVELOPMENT OF HUMAN RESOURCES (FIDERH) AWARD

- [International students](#)
- [Mexico](#)

[If you're a Mexican student joining a master's degree and you're in receipt of a FIDERH graduate loan, you could be eligible to benefit from a 20% discount on your tuition fees with a FIDERH Award.](#)

FUNED AWARD

- [International students](#)
- [Mexico](#)

If you're a Mexican student joining a master's degree and you're in receipt of a FUNED loan, you can apply to be considered for a 20% tuition fee discount. A total of up to 50 awards will be available to master's and PhD students per academic year.

FUNED SCHOLARSHIP FOR WOMEN IN STEM SUBJECTS

- [International students](#)
- [Mexico](#)

If you're a female Mexican student joining an eligible master's course in a science, technology, engineering or maths (STEM) subject and you're in receipt of a FUNED loan, you can apply to be considered for a 25% tuition fee discount. Up to five awards are available in each academic year.

HONG KONG GRADUATE ASSOCIATION & TUNG FOUNDATION

POSTGRADUATE SCHOLARSHIPS

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

If you're a master's student from Hong Kong or the People's Republic of China who can demonstrate academic excellence, you may be eligible to apply for a scholarship worth up to £10,000 in partnership with the Tung Foundation.

HRH PRINCESS SIRINDHORN UNIVERSITY OF LIVERPOOL SCHOLARSHIP (THAILAND)

- [International students](#)
- [Thailand](#)

If you're a student from Thailand joining a one-year master's degree, you might be eligible to apply to have your tuition fees paid in full and receive help with living costs. One award is available and only students who are new to the University will be considered.

HUMANITARIAN SCHOLARSHIPS FOR MASTER'S PROGRAMMES

- [International students](#)

Do you have recognised status as a refugee or person with humanitarian protection outside the UK? Or are you a Ukrainian who's sought temporary protection in the EU? You could be eligible to apply for the full payment of your master's fees and additional financial support.

JOHN LENNON MEMORIAL SCHOLARSHIP

- [Home students](#)

If you're a UK student, either born in or with strong family connections to Merseyside, you could be eligible to apply for a fee discount of up to £4,500. You'll need to demonstrate an active interest in global, community and environmental issues to be considered.

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JUVENTUDES GTO SCHOLARSHIP

- [International students](#)
- [Mexico](#)

[If you're a resident of the state of Guanajuato in Mexico joining a master's degree, you could be eligible for a 10% discount on your tuition fees with a JuventudEsGto Scholarship.](#)

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KAPLAN DIGITAL PATHWAYS EXCELLENCE SCHOLARSHIP

- [International students](#)

[Completed a Kaplan Digital Pathways Pre-Master's? We're offering a £5,000 fee discount off the first year of master's study for a maximum of two high achieving students joining one of our non-clinical master's courses from an online Kaplan Pre-Master's programme.](#)

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MARSHALL SCHOLARSHIP

- [International students](#)
- [United States](#)

[If you're a USA student joining an eligible master's with us, you could be eligible to apply for a Marshall Scholarship. If your application is successful, your master's tuition fees will be paid in full. One Marshall Scholarship for master's study is available in each academic year.](#)

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POSTGRADUATE OPPORTUNITY BURSARY

- [Home students](#)

[If you're a UK University of Liverpool graduate joining a master's degree with us, you could be eligible to receive £3,000 off your tuition fees. You must have graduated in the last two years and received a widening access scholarship during your undergraduate studies.](#)

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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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TURKISH MINISTRY OF EDUCATION SCHOLARSHIP

- [International students](#)
- [Turkey](#)

[If you're a Turkish student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Turkish Ministry of Education Scholarship.](#)

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UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE EXCELLENCE SCHOLARSHIP

- [International students](#)

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

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[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 fee discount worth £3,000 off the first year of your master's course.](#)

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[VICE-CHANCELLOR'S INTERNATIONAL ATTAINMENT SCHOLARSHIP FOR](#)

[MAINLAND CHINA](#)

- [International students](#)
- [China](#)

[Are you a high-achieving graduate from the People's Republic of China with a degree from a Chinese university? You could be eligible to apply for a £5,000 fee discount if you're joining an eligible master's course. Up to 15 eligible students will receive this scholarship.](#)

Entry requirements

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

Your qualification	Requirements About our typical entry requirements
GCSE	4/C in English and 4/C in Mathematics
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.
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 University of Liverpool International College , means you're guaranteed a place on your chosen course.

THE ORIGINAL

REDBRICK