UNIVERSITY OF LIVERPOOL

BSc (Hons)

Mathematics and Computer Science with a Year in Industry

UCAS code GG16

Entry requirements	Study mode	Duration
A level: AAA	Full-time	4 years

Apply by: **14 January 2026**
Starts on: **28 September 2026**

About this course

Mathematicians and computer scientists are amongst the most highly-prized graduates today.

Introduction

On this programme, you will divide your studies more or less equally between the two subjects, studying modules from Mathematics and Computer Science.

Mathematics is a fascinating, beautiful and diverse subject to study. It underpins a wide range of disciplines; from physical sciences to social science, from biology to business and finance. At Liverpool, our programmes are designed with the needs of employers in mind, to give you a solid foundation from which you may take your career in any number of directions.

From the underlying principles to the very edge of modern technology, this programme will cover aspects of Computer Science and ensure that when you graduate you will know exactly what is and isn't possible with computers.

On this **year in industry** programme, you will spend year three of this programme on a year-long placement with an approved company/organisation. During this time, you will develop work-based transferrable skills and professional competences

leading to enhanced employability which will make you well placed to take up opportunities in project-based, research and management roles.

What you'll learn

- Pure mathematics
- Applied mathematics
- Problem solving
- Team work
- How to communicate and present clearly
- Understanding different computer systems
- Building and structuring databases
- Fundamentals of software engineering
- Algorithmic foundations
- Complexity of algorithms and decision

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Course content

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

Year one

Year one of the programme has been designed as an even split between subjects related to computing and mathematics.

In year one students will typically undertake either COMP101 (Introduction to Programming) or COMP105 (Programming Language Paradigms) based on prior exposure to programming (eg Computer Science A level). Students without a computer science background will normally study COMP101, however in some instances may be permitted to enrol on COMP105 instead.

All other year one modules are required.

Modules

Compulsory modules	Credits
CALCULUS I (MATH101)	15
CALCULUS II (MATH102)	15
DATA STRUCTURES AND ALGORITHMS (COMP108)	15
DESIGNING SYSTEMS FOR THE DIGITAL SOCIETY (COMP107)	15
INTRODUCTION TO LINEAR ALGEBRA (MATH103)	15
OBJECT-ORIENTED PROGRAMMING (COMP122)	15
INTRODUCTION TO PROGRAMMING (COMP101)	15
PROGRAMMING LANGUAGE PARADIGMS (COMP105)	15

Optional modules	Credits
NEWTONIAN MECHANICS (MATH122)	15
NUMBERS, GROUPS AND CODES (MATH142)	15
INTRODUCTION TO STATISTICS USING R (MATH163)	15

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

Year two

In year two you continue with a mix of modules related to computer science and mathematics but also have the opportunity to specialise in certain subject areas of your choice.

Modules

Compulsory modules	Credits
COMPLEXITY OF ALGORITHMS (COMP202)	15

Optional modules	Credits
COMPUTER NETWORKS (COMP211)	15
COMPUTER SYSTEMS (COMP124)	15
DATABASE DEVELOPMENT (COMP207)	15
INTRODUCTION TO THEORY OF COMPUTATION (COMP218)	15

Optional modules	Credits
VECTOR CALCULUS WITH APPLICATIONS IN FLUID MECHANICS (MATH225)	15
CLASSICAL MECHANICS (MATH228)	15
COMPLEX FUNCTIONS (MATH243)	15
LINEAR ALGEBRA AND GEOMETRY (MATH244)	15
COMMUTATIVE ALGEBRA (MATH247)	15
OPERATIONAL RESEARCH: PROBABILISTIC MODELS (MATH268)	15
FINANCIAL MATHEMATICS (MATH260)	15
INTRODUCTION TO ARTIFICIAL INTELLIGENCE (COMP111)	15
CYBER SECURITY (COMP232)	15
GROUP SOFTWARE PROJECT (COMP208)	15
DISTRIBUTED SYSTEMS (COMP212)	15
COMPUTER-BASED TRADING IN FINANCIAL MARKETS (COMP226)	15
STATISTICS AND PROBABILITY I (MATH253)	15
PRINCIPLES OF COMPUTER GAMES DESIGN AND IMPLEMENTATION (COMP222)	15
DIFFERENTIAL EQUATIONS (MATH221)	15
STATISTICS AND PROBABILITY II (MATH254)	15

Optional modules	Credits
METRIC SPACES AND CALCULUS (MATH242)	15
OPERATIONAL RESEARCH: LINEAR AND CONVEX METHODS (MATH269)	15
NUMERICAL METHODS (MATH226)	15
SOFTWARE ENGINEERING I (COMP201)	15

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

Year in Industry (Year three)

Year three of the programme is taken up with a placement in a professional software industry environment.

Modules

Compulsory modules	Credits
INDUSTRIAL PLACEMENT Y3 (COMP299)	120

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

Year four

Modules

Optional modules	Credits
KNOWLEDGE REPRESENTATION AND REASONING (COMP304)	15

Optional modules	Credits
BIOCOMPUTATION (COMP305)	15
EFFICIENT SEQUENTIAL ALGORITHMS (COMP309)	15
MULTI-AGENT SYSTEMS (COMP310)	15
FORMAL METHODS (COMP313)	15
SOFTWARE ENGINEERING II (COMP319)	15
INTRODUCTION TO COMPUTATIONAL GAME THEORY (COMP323)	15
COMPUTATIONAL GAME THEORY AND MECHANISM DESIGN (COMP326)	15
OPTIMISATION (COMP331)	15
FURTHER METHODS OF APPLIED MATHEMATICS (MATH323)	15
CARTESIAN TENSORS AND MATHEMATICAL MODELS OF SOLIDS AND VISCOUS FLUIDS (MATH324)	15
QUANTUM MECHANICS (MATH325)	15
GROUP THEORY (MATH343)	15
COMBINATORICS (MATH344)	15
APPLIED PROBABILITY (MATH362)	15
LINEAR STATISTICAL MODELS (MATH363)	15
NETWORKS IN THEORY AND PRACTICE (MATH367)	15
ADVANCED ARTIFICIAL INTELLIGENCE (COMP219)	15

Optional modules	Credits
FINAL YEAR SECOND SEMESTER 15 CREDIT PROJECT (COMP392)	15
COMPLEX INFORMATION NETWORKS (COMP324)	15
COMMUNICATING COMPUTER SCIENCE (COMP335)	15
DATA MINING AND VISUALISATION (COMP337)	15
RELATIVITY (MATH326)	15
DIFFERENTIAL GEOMETRY (MATH349)	15
GAME THEORY (MATH331)	15
MATHEMATICAL RISK THEORY (MATH366)	15
MEDICAL STATISTICS (MATH364)	15
NUMBER THEORY (MATH342)	15
THEORY OF STATISTICAL INFERENCE (MATH361)	15
ADVANCED TOPICS IN COMPUTER GAME DEVELOPMENT (COMP342)	15
PROFESSIONAL PROJECTS AND EMPLOYABILITY IN MATHEMATICS (MATH390)	15
CLOUD COMPUTING FOR E-COMMERCE (COMP315)	15
QUANTUM COMPUTING AND SECURITY (COMP345)	15

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

Teaching and assessment

How you'll learn

Teaching is by a mix of formal lectures, small group tutorials and supervised laboratory-based practical sessions. Students also undertake individual and group projects. Key problem solving skills and employability skills, like presentation and teamwork skills, are developed throughout the programme.

How you're assessed

The main modes of assessment are through a combination of coursework and examination, but depending on the modules taken you may encounter project work, presentations (individual or group), and specific tests/tasks focused on solidifying learning outcomes.

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

A mathematically-based degree opens up a wide range of career opportunities, including some of the most lucrative professions.

Recent employers of our graduates are:

- Barclays Bank plc
- Deloitte
- Forrest Recruitment
- Marks and Spencer
- Mercer Human Resource Consulting Ltd.
- Venture Marketing Group.
- BAE Systems
- BT
- Guardian Media Group
- Royal Bank of Scotland
- Siemens
- Unilever.

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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 - £9,535
Year in industry fee - £1,850

International fees

Full-time place, per year - £28,300
Year in industry fee - £1,850

Fees are for academic year 2025/26.

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

Additional costs

Your tuition fee covers almost everything but you may have additional study costs to consider, such as books.

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.

AAA with grade A in A level Maths.

A levels

AAA
with grade A in Maths.

Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **ABB** with **A** in the EPQ.

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:

- Computer Science (Foundation) (4 year route with Carmel College) BSc (Hons)

T levels

T levels are not currently accepted.

GCSE

4/C in English and 4/C in Mathematics

Subject requirements

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

BTEC Level 3 National Extended Certificate

Acceptable at grade Distinction* (any subject) alongside AA at A level, including A Level Mathematics grade A.

BTEC Level 3 Diploma

Distinction* Distinction in BTEC considered alongside A Level Mathematics grade A.

BTEC Level 3 National Extended Diploma

D*D*D plus A level Maths grade A.

International Baccalaureate

36 points overall and no score less than 4 and including 6 in HL Mathematics, or pass the IB Diploma with 6,6,6 in three Higher Level subjects (including HL Mathematics).

Irish Leaving Certificate

H1,H1,H2,H2,H2,H2, including H1 in Higher Maths. We also require a minimum of H6 in Higher English or O3 in Ordinary English.

Scottish Higher/Advanced Higher

Acceptable on the same basis as A levels.

Welsh Baccalaureate Advanced

A in the Welsh Baccalaureate, plus AA at A level (including grade A in Mathematics).

Cambridge Pre-U Diploma

Principal subjects acceptable in lieu of A levels. 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.

Access

Pass Access to HE Diploma in a relevant subject with 45 Level 3 credits with 39 at Distinction (including 15 credits Mathematical or Computer Science credits) and 6 at Merit.

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.

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

6.0 overall, with no component below 5.5

TOEFL iBT

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

Duolingo English Test

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

Pearson PTE Academic

59 overall, with no component below 59

LanguageCert Academic

65 overall, with no skill below 60

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.

Cambridge IGCSE First Language English 0990

Grade 4 overall, with Merit in speaking and listening

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.

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.

Cambridge ESOL Level 2/3 Advanced

169 overall, with no paper below 162

International Baccalaureate English A: Literature or Language & Literature

Grade 4 at Standard Level or grade 4 at Higher Level

International Baccalaureate English B

Grade 6 at Standard Level or grade 5 at Higher Level

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
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 component below 4.5	30 weeks	On campus

Your most recent IELTS score	Pre-sessional English course length	On campus or online
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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