UNIVERSITY OF LIVERPOOL

BSc (Hons)

Computer Science

UCAS code G400

Entry requirements	Study mode	Duration
A level: AAA	Full-time	3 years

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

About this course

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

Introduction

Study Computer Science at Liverpool and develop a deep understanding of the technology that underpins much of modern life and society. Computer Science is a great choice for those with a keen interest in computers, software and technology. You'll create functional applications as well as how to consistently iterate and improve your work.

Computer Science is a broad area covering many topics. During the first year of this course, we provide you with a strong foundation on the core elements of a Computer Science degree. This includes programming, computer systems, data structures, algorithms, and an introduction to artificial intelligence.

After learning core theory in year one, you can choose to maintain a balanced mixture of modules throughout your degree and graduate with the degree title **Computer Science BSc (Hons)**. Or you can opt to develop specialist knowledge and

graduate with an alternative degree title, in selected areas of computer science by choosing one of the following pathways:

Computer Science BSc (Hons) – Algorithms and Optimisation pathway

Many problems are highly complex and hard to solve even by a computer, requiring solutions designed to exhibit predictable behaviours in terms of their computational cost and data requirements. The Algorithms and Optimisation pathway is concerned with the theoretical modelling of algorithms and their properties. It looks at how complex tasks can be achieved more efficiently. Topics covered in this specialism may include Algorithms, Theory of Computation, Computational Game Theory, Optimisation, Big Data Analysis, Biocomputation, and Complex Information Networks. Learn more about this pathway.

Computer Science BSc (Hons) – Artificial Intelligence pathway

This pathway is concerned with the knowledge and the construction of intelligent entities. We will expose you to the many challenges found in modern AI, and in the pragmatic acquisition and utilisation of knowledge and data for a variety of real-world problems. You will explore concepts such as autonomous control and decision making which are crucial for robotics and intelligent systems. Areas covered within this specialism may include Advanced Artificial Intelligence, Deep Learning and Machine Learning, Robotics and Autonomous Systems, Computer Vision, Knowledge Representation, and Data Mining. Learn more about this pathway.

Computer Science BSc (Hons) – Cyber Security pathway

In today's digital world, cybersecurity has never been more crucial. Ranging from the fundamentals of cryptography to mastering network security, this pathway equips students with the skills needed to tackle real-world challenges in protecting sensitive information and systems from cyber threats. Topics covered in this specialism may include Cyber Security, Computer Forensics, Computer Networks and Network Security, Formal Methods, and Robot Perception and Manipulation. Learn more about this pathway.

Computer Science BSc (Hons) – Data Science pathway

With our ever-increasing volume of data, it is essential that we can exploit the right theories and tools to extract meaningful knowledge. Within the Data Science pathway, you will learn to understand data and elicit usable knowledge. The specialism teaches students the necessary skills to analyse, discover and apply the knowledge from larger repositories and data sources. This specialism investigates the extraction of novel knowledge and insight from different types of data. Topics in this pathway may include Big Data Analysis, Machine Learning and Data Mining, Databases and Knowledge Bases, Knowledge-based Systems, High-Performance Computing, Knowledge Graphs and Web-Scale Ontologies, Image Processing, and Neural Networks. Learn more about this pathway.

Our Computer Science BSc programme and pathways are accredited by the British Computer Society which means that the course is continually updated and adapted to reflect new technologies and emerging trends.

What you'll learn

- Programming in Java
- Understanding different computer systems
- Building and structuring databases
- Fundamentals of software engineering
- Algorithmic foundations
- Complexity of algorithms and decision
- Computation and language
- Uses and possibilities of biocomputation
- Introduction of Computation Game Theory
- Complex social networks

Accreditation

Accredited by BCS, so opens up a wide variety of career opportunities with excellent employment prospects.

Accreditation in detail

BCS

The Chartered Institute for IT for the purposes of fully meeting the academic requirement for registration as a Chartered IT Professional.

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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

In year one you will learn the fundamentals of Computer Science. Starting with an introduction to procedural programming using commonly found language platforms, you'll move on to learn about the importance of hardware and software components within the operation of computer systems, formal analytic techniques and the development of artificial intelligence.

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 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
ANALYTIC TECHNIQUES FOR COMPUTER SCIENCE (COMP116)	15
COMPUTER SYSTEMS (COMP124)	15
DATA STRUCTURES AND ALGORITHMS (COMP108)	15
DESIGNING SYSTEMS FOR THE DIGITAL SOCIETY (COMP107)	15
FOUNDATIONS OF COMPUTER SCIENCE (COMP109)	15
INTRODUCTION TO ARTIFICIAL INTELLIGENCE (COMP111)	15

Compulsory modules	Credits
OBJECT-ORIENTED PROGRAMMING (COMP122)	15

Optional modules	Credits
INTRODUCTION TO PROGRAMMING (COMP101)	15
PROGRAMMING LANGUAGE PARADIGMS (COMP105)	15

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

Year two

In year two you will expand your knowledge of key concepts and skills related to software development and database development. You will also begin to choose which wider elements of computer science you want to engage with such as cyber security, computer-based trading in financial markets and principles of computer game design.

Your choice of modules will take you down a general or specialist pathway.
You can choose to graduate with Computer Science BSc (Hons) or one of the following degrees:

- Computer Science BSc (Hons) – Algorithms and Optimisation pathway
- Computer Science BSc (Hons) – Artificial Intelligence pathway
- Computer Science BSc (Hons) – Cyber Security pathway
- Computer Science BSc (Hons) – Data Science pathway.

Modules

Compulsory modules	Credits
COMPLEXITY OF ALGORITHMS (COMP202)	15

Compulsory modules	Credits
DATABASE DEVELOPMENT (COMP207)	15
GROUP SOFTWARE PROJECT (COMP208)	15
SOFTWARE ENGINEERING I (COMP201)	15

Optional modules	Credits
THE C++ PROGRAMMING LANGUAGE (COMP282)	7.5
ADVANCED ARTIFICIAL INTELLIGENCE (COMP219)	15
COMPUTER AIDED SOFTWARE DEVELOPMENT (COMP285)	7.5
COMPUTER-BASED TRADING IN FINANCIAL MARKETS (COMP226)	15
COMPUTER NETWORKS (COMP211)	15
INTRODUCTION TO THEORY OF COMPUTATION (COMP218)	15
DISTRIBUTED SYSTEMS (COMP212)	15
PLANNING YOUR CAREER (COMP221)	7.5
PRINCIPLES OF C AND MEMORY MANAGEMENT (COMP281)	7.5
PRINCIPLES OF COMPUTER GAMES DESIGN AND IMPLEMENTATION (COMP222)	15
SCRIPTING LANGUAGES (COMP284)	7.5
SOFTWARE DEVELOPMENT TOOLS (COMP220)	15

Optional modules	Credits
CYBER SECURITY (COMP232)	15
INTRODUCTION TO DATA SCIENCE (COMP229)	15
APP DEVELOPMENT (COMP228)	15
PROGRAMMING LANGUAGE PARADIGMS (COMP105)	15

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

Year three

Year three is where you will start to build on what you've learnt to far with your own research and exploration by undertaking an individual project. Whilst guided, you will work independently to explore a substantial computer science problem in depth, making use of the principles, techniques and methodologies acquired elsewhere in the programme.

Your choice of modules will take you down a general or specialist pathway.
You can choose to graduate with Computer Science BSc (Hons) or one of the following degrees:

- Computer Science BSc (Hons) – Algorithms and Optimisation pathway
- Computer Science BSc (Hons) – Artificial Intelligence pathway
- Computer Science BSc (Hons) – Cyber Security pathway
- Computer Science BSc (Hons) – Data Science pathway.

Modules

Compulsory modules	Credits
HONOURS YEAR COMPUTER SCIENCE PROJECT (COMP390)	30

Optional modules	Credits
BIOCOMPUTATION (COMP305)	15
COMMUNICATING COMPUTER SCIENCE (COMP335)	15
COMPLEX INFORMATION NETWORKS (COMP324)	15
COMPUTATIONAL GAME THEORY AND MECHANISM DESIGN (COMP326)	15
EFFICIENT SEQUENTIAL ALGORITHMS (COMP309)	15
FORMAL METHODS (COMP313)	15
IMAGE PROCESSING (ELEC319)	7.5
INTRODUCTION TO COMPUTATIONAL GAME THEORY (COMP323)	15
KNOWLEDGE REPRESENTATION AND REASONING (COMP304)	15
MULTI-AGENT SYSTEMS (COMP310)	15
NEURAL NETWORKS (ELEC320)	7.5
ONTOLOGIES AND SEMANTIC WEB (COMP318)	15
OPTIMISATION (COMP331)	15
AUTONOMOUS MOBILE ROBOTICS (COMP329)	15
SOFTWARE ENGINEERING II (COMP319)	15
COMPUTER FORENSICS (COMP343)	15
BIG DATA ANALYTICS (COMP336)	15

Optional modules	Credits
COMPUTER VISION (COMP338)	15
DATA MINING AND VISUALISATION (COMP337)	15
HIGH PERFORMANCE COMPUTING (COMP328)	15
ROBOT PERCEPTION AND MANIPULATION (COMP341)	15
ADVANCED TOPICS IN COMPUTER GAME DEVELOPMENT (COMP342)	15
CLOUD COMPUTING FOR E-COMMERCE (COMP315)	15

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

Teaching and assessment

How you'll learn

Teaching is 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

Liverpool's computer science graduates go onto well-paid graduate jobs and careers such as: computer programmer; software developer; systems analyst; software engineer; technical consultant; web designer.

Computer science graduates will enter a high-in-demand pool in the field with possible roles in:

- computer programmers, web developers, or software engineers
- data scientists
- artificial intelligence researchers
- systems analysts
- technical consultants.

Recent employers include:

- 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 - £1,905
Year abroad fee - £1,430 (applies to year in China)

International fees

Full-time place, per year - £29,900
Year in industry fee - £1,905
Year abroad fee - £14,950 (applies to year in China)

The tuition fees shown are correct for 2025/26 entry. Please note that the year abroad fee also applies to the year in China.

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

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.

AAA incl. A-level Maths or Computer Science. BTEC D*D*D* plus A-level Maths or Computer Science. If A-level Maths isn’t taken, require GCSE Maths Grade A (7) or above.

A levels

AAA including Maths or Computer Science

Narrowly missed the entry requirements on results day? If you've studied these subjects, we may take them into account:

A level Mathematics or Computer Science required. If A level Maths is not taken, GCSE Maths Grade B (6) or above is required AND the Applicant will be required to take the Indicative Maths test and pass, before receiving an offer.

Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **AAB** 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. A Levels must include Mathematics or Computer Science.

BTEC Level 3 Diploma

BTEC Level 3 National Diploma: Acceptable at grade Distinction* Distinction (any subject) alongside A at A level (including Mathematics or Computer Science).

BTEC Level 3 National Extended Diploma

BTEC Level 3 National Extended Diploma: D*D*D* plus A level Maths or Computer Science. If A level Maths isn't taken, require GCSE Maths Grade A (7) or above.

International Baccalaureate

36 overall including 5 in Higher Level Mathematics or Computer Science.

Irish Leaving Certificate

H1,H1,H2,H2,H2, H2 including H2 in Higher Maths or Computer Science. We also require a minimum of H6 in Higher English, or O3 in Ordinary English and Ordinary Maths (plus indicative Maths test).

Scottish Higher/Advanced Higher

Scottish Advanced Higher acceptable on the same basis as A levels

Welsh Baccalaureate Advanced

Welsh Bacc: Acceptable at grade A alongside AA at A level including Maths or Computer Science.

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

Considered if taking a relevant subject. 45 Level 3 credits at Distinction, including 15 Level 3 credits in Mathematical or Computer Science subjects is required. GCSE English and Mathematics grade C/grade 4 or above also required.

International qualifications

Select your country or region to view specific entry requirements.

If you hold a bachelor's degree or equivalent, but don't meet our entry requirements, you could be eligible for a Pre-Master's course. This is offered on campus at the University of Liverpool International College, in partnership with Kaplan International Pathways. It's a specialist preparation course for postgraduate study, and when you pass the Pre-Master's at the required level with good attendance, you're guaranteed entry to a University of Liverpool master's degree.

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.

TOEFL Paper

Grade 6 at Standard Level or grade 5 at Higher Level

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

LanguageCert

Grade 4 at Standard Level or grade 4 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

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