



UNIVERSITY OF  
LIVERPOOL

BSc (Hons)

# Computer Science – Artificial Intelligence pathway

UCAS code G400

Entry requirements	Study mode	Duration	Apply by: <b>14 January 2026</b>
A level: AAA	Full-time	3 years	Starts on: <b>28 September 2026</b>

## 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) – 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.

## **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) – 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.

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## 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
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## Accreditation

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

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### 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.

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## 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
<a href="#"><u>ANALYTIC TECHNIQUES FOR COMPUTER SCIENCE (COMP116)</u></a>	15
<a href="#"><u>COMPUTER SYSTEMS (COMP124)</u></a>	15
<a href="#"><u>DATA STRUCTURES AND ALGORITHMS (COMP108)</u></a>	15
<a href="#"><u>DESIGNING SYSTEMS FOR THE DIGITAL SOCIETY (COMP107)</u></a>	15
<a href="#"><u>FOUNDATIONS OF COMPUTER SCIENCE (COMP109)</u></a>	15
<a href="#"><u>INTRODUCTION TO ARTIFICIAL INTELLIGENCE (COMP111)</u></a>	15

Compulsory modules	Credits
<a href="#"><u>OBJECT-ORIENTED PROGRAMMING (COMP122)</u></a>	15
<a href="#"><u>INTRODUCTION TO PROGRAMMING (COMP101)</u></a>	15
<a href="#"><u>PROGRAMMING LANGUAGE PARADIGMS (COMP105)</u></a>	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.

You must choose Artificial Intelligence (COMP219) and at least 15 credits from the following optional modules to follow the Artificial Intelligence pathway:

- Introduction to Theory of Computation (COMP218)
- Introduction to Data Science (COMP229)
- Principles of Computer Games Design and Implementation (COMP222).

## Modules

Compulsory modules	Credits
<a href="#"><u>COMPLEXITY OF ALGORITHMS (COMP202)</u></a>	15
<a href="#"><u>DATABASE DEVELOPMENT (COMP207)</u></a>	15
<a href="#"><u>GROUP SOFTWARE PROJECT (COMP208)</u></a>	15

Compulsory modules	Credits
<a href="#"><u>SOFTWARE ENGINEERING I (COMP201)</u></a>	15

Optional modules	Credits
<a href="#"><u>ADVANCED ARTIFICIAL INTELLIGENCE (COMP219)</u></a>	15
<a href="#"><u>INTRODUCTION TO THEORY OF COMPUTATION (COMP218)</u></a>	15
<a href="#"><u>INTRODUCTION TO DATA SCIENCE (COMP229)</u></a>	15
<a href="#"><u>PRINCIPLES OF COMPUTER GAMES DESIGN AND IMPLEMENTATION (COMP222)</u></a>	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.

Choose at least **60 credits** from the following optional modules to follow the Artificial Intelligence pathway:

- Knowledge Representation and Reasoning (COMP304)
- Biocomputation (COMP305)
- Autonomous Mobile Robotics (COMP329)
- Computer Vision (COMP338)
- Multi-Agent Systems (COMP310)
- Formal Methods (COMP313)
- Ontologies and Semantic Web (COMP318)

- Data Mining and Visualisation (COMP337)
- Robot Perception and Manipulation (COMP341).

## Modules

Compulsory modules	Credits
<a href="#"><u>HONOURS YEAR COMPUTER SCIENCE PROJECT (COMP390)</u></a>	30

Optional modules	Credits
<a href="#"><u>KNOWLEDGE REPRESENTATION AND REASONING (COMP304)</u></a>	15
<a href="#"><u>BIOCOMPUTATION (COMP305)</u></a>	15
<a href="#"><u>AUTONOMOUS MOBILE ROBOTICS (COMP329)</u></a>	15
<a href="#"><u>COMPUTER VISION (COMP338)</u></a>	15
<a href="#"><u>MULTI-AGENT SYSTEMS (COMP310)</u></a>	15
<a href="#"><u>FORMAL METHODS (COMP313)</u></a>	15
<a href="#"><u>ONTOLOGIES AND SEMANTIC WEB (COMP318)</u></a>	15
<a href="#"><u>DATA MINING AND VISUALISATION (COMP337)</u></a>	15
<a href="#"><u>ROBOT PERCEPTION AND MANIPULATION (COMP341)</u></a>	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 – £9,790

Year in industry fee – £1,955

Year abroad fee – £1,465 (applies to year in China)

### International fees

Full-time place, per year – £32,000

Year in industry fee – £1,955

Year abroad fee – £14,950 (applies to year in China)

The fees shown are for the academic year 2026/27. Please be advised that tuition fees may increase each year for both UK and international students. For UK students, this will be subject to the government's regulated fee limits.

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.



# Entry requirements

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

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## A levels

AAA

in A levels including Maths or Computer Science

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

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)

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## T levels

T levels are not currently accepted.

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## GCSE

Further Education requirements, in addition to Level 3 GCSE qualifications, must be met. GCSE grade minimum 4/C in English and 4/C in Mathematics.

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## Subject requirements

A level Mathematics or Computer Science is required. For applicants from England: for science A levels that include the separately graded practical endorsement, a "Pass" is required.

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### **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.

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### **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).

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### **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.

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### **International Baccalaureate**

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

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### **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).

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### **Scottish Higher/Advanced Higher**

Scottish Advanced Higher acceptable on the same basis as A levels

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### **Welsh Baccalaureate Advanced**

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

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### **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.

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## 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.

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## 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.

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## 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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## 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.

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### **IELTS**

6.0 overall, with no component below 5.5

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### **TOEFL iBT**

If you took a TOEFL test on or before 20 January 2026, you'll need 78 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking 19. If you took a TOEFL test from 21 January 2026 onwards, when a new scoring system was introduced, you'll need 4 overall, with 4 or above in all components. TOEFL Home Edition not accepted.

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### **Duolingo English Test**

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

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### **Pearson PTE Academic**

59 overall, with no component below 59

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### **LanguageCert Academic**

65 overall, with no skill below 60

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### **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.

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### **Cambridge IGCSE First Language English 0990**

Grade 4 overall, with Merit in speaking and listening

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### **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.

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### **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.

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### **Cambridge ESOL Level 2/3 Advanced**

169 overall, with no paper below 162

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### **International Baccalaureate English A: Literature or Language & Literature**

Grade 4 at Standard Level or grade 4 at Higher Level

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### **International Baccalaureate English B**

Grade 6 at Standard Level or grade 5 at Higher Level

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## **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.

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### **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.

<b>Your most recent IELTS score</b>	<b>Pre-sessional English course length</b>	<b>On campus or online</b>
5.5 overall, with no component below 5.5	6 weeks	On campus or online
5.5 overall, with no component below 5.0	10 weeks	On campus or online
5.0 overall, with no component below 5.0	12 weeks	Online
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.

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