Computer Science

What is the exam board and route?

A Level Computer Science AQA

Subject Entry Requirements: Grade 7 in GCSE Maths or Computer Science is advised.

Subject outline

Programming (Python):
Students learn to code in Python, focusing on core programming concepts such as variables, loops, functions, and development of algorithms.

Data Representation:
Understanding how computers represent data in binary, including numbers, text, images, and sound.

Computer Architecture:
Study of the CPU, memory, and how computers process instructions, including the fetch-execute cycle and logic gate circuits.

Algorithms & Problem Solving:
Introduction to key algorithms, such as searching, sorting, and pathfinding understanding how to optimise problem-solving techniques, discuss what is computable and what is not.

Ethics and Laws:
Exploring the legal, ethical, and environmental issues in computing, including data privacy, cyber security and Big Data.

Fundamentals of Networking:
Learning about how computers communicate over networks, covering protocols, Local networks and Internet working.

Programming Project Non-Examined Assessment (NEA):
A practical coursework project where students design, code, and evaluate a solution to a real-world problem providing a high level of flexibility for students to explore their own ideas.

How is the course assessed?

Two exams at the end of Year 13 (each worth 40%)

Programming project (NEA) worth 20%

Why study this subject?

The most important aspect of Computer Science is problem-solving, a fundamental skill for life. Students explore the design, development, and analysis of both software and hardware, learning to

solve problems in a wide range of contexts. Since computers are designed to serve people, Computer Science also has a significant human element.

Additionally, Computer Science has strong ties to Mathematics. Students who enjoy mathematics will likely appreciate the programming, problem-solving, and logical thinking involved in this course, which complements their mathematical skills.

Complementary subjects

Physics, Maths, Further Maths.

What can an A Level in Computer Science lead to?

Computer Science is a rapidly expanding field. In the past decade, new technologies have driven job creation in areas such as software engineering, game development, and data analysis. Many future careers are directly linked to advancements in Computer Science.

For students aiming to study Computer Science at university, it is strongly recommended to also take A Level Maths. Many pure computer science university programmes have a mathematical focus and having an A Level in the subject will provide an excellent foundation for success in more advanced computational thinking.

Subject enrichment available

- Coding Club
- Robotics and Raspberry Pi Club
- Support with STEM projects
- Oxbridge application and interview preparation