

# Computer Science

## Why study Computer Science?

Computer Science is one of the most exciting and important subjects in today's world. At its heart lies problem-solving, a critical life skill that helps students approach challenges with logical thinking and creativity. In this course, students learn to design, develop, and analyse both software and hardware systems, gaining insight into how technology works and how it can be used to solve real-world problems. Computer Science also builds on and enhances mathematical thinking, making it particularly suited to students who enjoy working with logic, structure, and numbers. Students will develop a deep understanding of computational thinking and programming alongside core theoretical knowledge.

## Entry Requirements

Grade 7 in GCSE Maths or Computer Science.

## Course Content

The key areas covered include:

- **Programming (Python):** Learning to write and refine code, focusing on problem-solving and the development of efficient, well-structured programmes.
- **Data Representation:** Understanding how text, images, and sound are stored and processed by computers.
- **Computer Architecture:** Exploring the internal workings of a computer, including the CPU, memory, and storage.
- **Algorithms & Problem Solving:** Learning how algorithms are designed and evaluated and applying them to a range of scenarios.
- **Ethics & Laws:** Considering the ethical, legal, and environmental impact of digital technology in society.
- **Fundamentals of Networking:** Investigating how data is transmitted and how networks operate, including the Internet.

## Relevance

Computer Science is a rapidly expanding field, with new technologies driving job creation in areas such as software engineering, game development, and data analysis. As digital transformation continues to reshape every sector of the economy, the skills developed through this course are increasingly sought after by employers in both the public and private sectors.

## Career versatility

Graduates often pursue careers in various fields, including software development, cybersecurity, Artificial Intelligence (AI), game design, robotics, and data science. The analytical and technical skills

gained through this course are transferable across a wide range of industries, opening doors to rewarding and future-proof careers.

### Academic flexibility and skills developed:

Computer Science pairs particularly well with subjects like Mathematics, Physics, and Engineering, creating strong university applications for courses in STEM fields. Throughout the course, students develop a range of transferable skills, including programming, logical reasoning, problem-solving, independent research, and teamwork. These skills are not only essential for further academic study but are also highly valued by employers across industries.