

Computer Science introduces students to the “stuff behind the screen”. Students will learn about the hardware, software and programming involved in making computers for modern society. Students will gain valuable problem solving skills and an understanding of how computers work. Students will continue developing their knowledge of programming through the Python programming language they started to learn in KS3.

To use a car analogy, students who study computer science are the engineers who work ‘under the bonnet’, understand how each component works, and how to repair and build them. These engineers can drive the car, but those wanting to be a racecar driver will study digital information technology.

This course builds on:

- Skills and knowledge from Key Stage 3 in the areas of algorithms, programming, data representation, hardware and communications and networking.

The course aims to:

- Develop understanding of current and emerging technologies
- Develop computer programs to solve real world problems
- Develop critical thinking and problem solving skills for use across a range of topics

Coursework and Examination:

- **Computer Systems - written paper (worth 50%)**
This examined unit explores systems architecture, memory and storage, computer networks, cyber security, system software and ethical, legal, cultural and environmental concerns.
- **Computational Thinking, Algorithms and Programming - written paper (worth 50%)**
This examined unit explores algorithms, programming fundamentals, producing robust programs, computational logic, programming language environments.
- **Practical programming**
Throughout the course students will investigate programming techniques then generate a solution to a problem by analysing, designing, developing, testing and evaluating. In the Computational Thinking exam, students will be expected to write code to solve a problem, so we prepare them for this throughout KS4 study.

Progression Pathways to further and higher education:

- KS5 Computer Science or IT
- University
- Apprenticeships

Career Opportunities:

- Computer Programmer
- Software Developer
- Cyber-Security Analyst
- App Developer
- Game Developer
- Digital Animator