

GCSE Computer Science

What do you learn in Computer Science?

In Computer Science, you study the science of how computers work. This involves looking at the internal parts of a computer (the CPU, the motherboard, RAM etc.) and how they communicate with each other to produce what we want to see on the screen. You will closely study how the binary number system is used to store files such as Images and Sound clips. You will also look at key software used by a computer, including the chance to write software yourself using the Python programming language.

Do you make games in Computer Science?

You do not make "games" in Computer Science. However, you **do** learn how to write code. In lesson, we will look at efficient ways to solve programming problems and if done correctly will give you the skills necessary to start making any program you wish (including games).

What programming language do you use?

At GCSE, you will focus on the programming language Python. It is a very common programming language used in the computing industry. You will learn all of the key programming constructs (selection, iteration, and procedures) which can be applied to any language if you are interested in learning another.

Do you need to like coding?

Around 50% of the course is learning to code. It does not have to be your biggest interest with computers, but you should definitely enjoy the challenge of solving problems through code.

Do you need to be good at Maths?

Writing code is very similar to Maths in that there are logical steps to take and there is a lot of problem solving / difficult puzzles involved. Maths might not be your best subject, but if you enjoy the problems that you get in Maths then you will definitely enjoy the programming challenges in Computing!

What exams are there and what do you need to know for them?

There are two exams, which represent 50% each of your overall grade at GCSE. The first exam focuses on the internal parts of the computer, the binary number system, networks and the ethics of Computer Science (e.g. what laws are in place to prevent crimes being committed online?). The second exam focuses more on logical thinking and problem solving. Pseudocode features in this paper.

Is the work quite challenging?

Yes. The work given in Computing is difficult but very rewarding. Be prepared to spend a lot of time fixing errors in your code, but if you are patient then you will get better at finding the errors over time and develop into a truly experienced programmer.

What skills do you need to be good at Computer Science?

The most important skill needed is to enjoy solving puzzles. Most of the work in Computer Science can be seen as a big puzzle, which you must break down into smaller and simpler problems, which then make it easier to solve. Therefore, if you like problem solving, this is the course for you.

What sort of work do you do in a typical lesson?

A typical week in Computing is split with 50% of the time spent on theory topics, and the other 50% spent on programming skills. One lesson, you might be studying how the processor can examine millions of 1s and 0s in one second, and next lesson you will be writing code for a processor to execute. There is always a balance to keep on top of your programming skills whilst also learning about exciting advances in technology.

Do you get to build computers?

Yes and No. We do spend a lot of time studying the internal parts of a computer and may spend a lesson taking an old computer apart. However, the key focus is on the theory of how these devices work. After covering the whole course, you will have all the skills necessary to build your own computer but it is not the key focus of the subject

What software do you use?

To keep your work organised we frequently use Microsoft Teams and the Class Notebook software, which allows us to keep our notes, our work stored digitally, and accessible from any device (you can get the app on your phone, as well as your computer).

When programming, we will use two different Integrated Development Environments (IDEs) to learn how to write code in Python. When starting the course, it is good to have at least one of these IDEs installed at home (they are both free).