

# GCSE Computer Science

It is a fantastic course that allows you to broaden your knowledge of how computers function. If you are interested in learning about how to make computers do what YOU want and would like to know what actually happens inside a computer, then this is the course for you!

Not only will you learn to code in a programming language (Python), you will also learn about what makes computers work and key problem solving skills that can be applied across a variety of different situations that you will face in life

Do you like solving problems?

Can you think logically?

Is your Maths pretty good?

Are you willing to learn new concepts and push yourself?

## Year 10

### TOPIC 2: COMPUTERS

We will explore the hardware components of computer systems, which will include the CPU components, the fetch-decode-execute cycle, CPU performance, as well as memory and storage.

### TOPIC 6 Python programming

We will explore how to create programs that incorporate inputs, outputs, variables, IF statements, loops, subprograms, and lists.

### TOPIC 3: DATA

We will delve into how binary is utilised to represent positive and negative numbers, characters, images, and sounds.

Binary Arithmetic  
Data Storage and Compression

### TOPIC 5 Computational Thinking

We will learn to plan algorithms using Flowcharts and applying decomposition and abstraction.

## Year 11

### TOPIC 2: COMPUTERS

We will explore the features of programming languages, distinguishing between low-level and high-level languages. Additionally, we will examine the various types of translators.

### Topic 4: Networks

We will delve into the advantages of linking devices to a network and examine the various hardware required for network setup. Additionally, we will explore how data travels across the internet and the different modes of communication involved. Furthermore, we will analyze network security measures and strategies to safeguard against hackers.

### TOPIC 5: COMPUTATIONAL THINKING

We will investigate how searching and sorting algorithms work

### TOPIC 2: COMPUTERS

We will explore the software components that make up computer systems.

This includes understanding the role of operating systems and various utility programs.

### TOPIC 6 Python programming

We will explore how to create programs that utilise arrays, strings, and input validation. Additionally, we will learn the process of reading from and writing to files.

### TOPIC 5: COMPUTATIONAL THINKING

We will explore how to follow, modify, and create algorithms, as well as build trace tables.

Additionally, we will delve into Boolean logic (AND, OR, and NOT) and create truth tables for basic logic circuits.

### TOPIC 1: ISSUES AND IMPACT

We will explore the latest trends in computing technologies and their effects on individuals, society, and the environment, while also addressing ethical, legal, and ownership concerns. Topics of discussion will include:

Cyber threats and their prevention  
AI and biased algorithms  
Privacy issues  
Computing laws

