Computer Science at Norbury High

Overview

Students study three lessons of computer science over two weeks in years 8 and 9 and two lessons over two weeks in year 7. They study a range of topics; our aim is to have a mix of practical hands-on work and theoretical discussions about specific issues. We want all our students to be confident in their understanding of both software and hardware and how they work together. The majority of the units in KS3 are geared towards preparing our students with the necessary knowledge and skills to undertake the Computer Science GCSE course in KS4.

Key Stage 3

Year 7

UNIT 1: Data representation

Students look at the base 2 number system that is made up of 1 and 0 and are offered brief explanations of how computers communicate through this code.

UNIT 2: Databases

Students learn about how data and information can be organised digitally. They will understand the concept of relational databases and its benefits. They will look at real world examples and look to create their own mini databases.

UNIT 3: Scratch programming

They will learn a user-friendly, block-based programming language like Scratch to develop their programming fundamentals and computational thinking.

UNIT 4: Python Programming

Students will use their programming fundamentals from Scratch to begin learning Python, the programming language. They will move from block based to test-based programming language. They will gain a further understanding of sequence, variables, debugging and more.

UNIT 5: Flowol & Algorithms

This unit examines some of the different ways we can plan out projects for efficiency. We look at how we can visualise flowcharts and how they can be incorporated into real world systems.

Year 8

UNIT 1: Python programming

A more in-depth study of the programming language Python is offered by this unit. Students will enhance their skills and create more complicated programs.

UNIT 2: CPU & Logic Gates

In this unit, students learn about computer circuits and Boolean logic operations as well as verification and validations. They will also be looking at what CPUs are and what role they play in the function of a computer.

UNIT 3: Networks

The students will be looking at the importance of networks and how they play a pivotal part in the infrastructure around us. They will be looking at real world examples such as the internet as well the network in our very school.

UNIT 4: Ethical computing

This unit examines how technology has changed the job market for large numbers of people and questions the ethics of replacing people in the workplace with machines. Students are also asked to consider how large amounts of computer waste can be avoided.

UNIT 5: My heritage and computing

After learning about some of the pioneers of computing, students are asked to research a person who has made changes to the way we live today and give a presentation to the class.

Year 9

UNIT 1: Systems security

Students learn about staying safe online and some of the more frequent attacks on computers and individuals that can occur while connected to a network.

UNIT 2: CPU & Logic Gates

In this unit, students learn about computer circuits and Boolean logic operations as well as verification and validations. They will also be looking at what CPUs are and what role they play in the function of a computer.

UNIT 3: Python +

Here the students will be building on their knowledge of Python from year 8 and working on advanced elements. They will be looking at searching and sorting in Python.

UNIT 4: AI

This is an exciting unit where the students will be looking at the world of Artificial Intelligence. They will be exploring how AI works and what machine learning is. We also look at the dangers of AI and the use of AI in education.

UNIT 5: Back to the future

This unit looks in depth at how technology has evolved over time and how it is likely to continue evolving. What will the future hold for the technology industry?

Key Stage 4 Cambridge Nationals IT

Year 11 Information Technology

Students in Year 11 will complete the OCR Cambridge Nationals in Information Technologies (J836) qualification. This course develops practical, real-world IT skills alongside an understanding of how technology is used in business and industry.

UNIT R060: Data Manipulation

The examined unit, R060: Data Manipulation, develops students' understanding of how data is collected, stored, processed and presented in organisations. Students explore different types of data, including qualitative and quantitative data, and consider a range of data collection methods. They learn how data is stored securely and examine the legal, ethical and environmental considerations surrounding data use, including data protection legislation and the responsibilities organisations have when handling personal information.

UNIT R070: Augmented Reality

In the internally assessed unit R070: Using Augmented Reality to Present Information, students design, plan and create an augmented reality product. They develop digital assets, build and test an AR solution and evaluate the effectiveness of their final product. This unit encourages creativity alongside technical skill, enabling students to apply their knowledge in a practical and innovative way.

UNIT R050: IT in the Digital World

In R050: IT in the Digital World, students investigate how IT systems are used within organisations. They study hardware and software components, networking, cybersecurity risks and the legal and ethical issues linked to IT systems. They also explore emerging technologies and evaluate how digital systems support business operations while considering potential risks and impacts.