



GCSE Computer Science

Key contacts:

Mrs S Brooks, Acting Head of Department

Exam Board:

OCR

Overview of the course:

This exciting GCSE gives students an excellent opportunity to investigate how computers work and how they are used, and to develop computer programming and problem-solving skills. They will also do some fascinating in-depth research and practical work. For example, some of the current investigations look at JavaScript, Python, encryption and assembly language programming.

This two-unit course is designed to give students an in-depth understanding of how computer technology works and a look at what goes on 'behind the scenes'. They do not need to have studied the subject before, however given the academic nature of this course, it is likely to suit students who are on track for a Grade 6 or above in English and Mathematics. Students should also have an interest in programming. Assessment is based on two written examinations.

What will you study?

The course will help students learn about computational thinking, analysis and problem solving. It is a fun and interesting way to develop these skills, which can also be transferred to other subjects and even applied in day-to-day life.

Content

The course comprises three units:

J277/01 – Computer Systems and Programming (50%). This unit will cover the theory about a wide range of issues including the Central Processing Unit (CPU), data representation, computer memory and storage, wired and wireless networks, network topologies, system security and system software.

J277/02 – Computational thinking, algorithms and programming (50%). This unit is hugely practical and covers algorithms and programming, learning about programming techniques, how to produce robust programs, computational logic, translators and facilities of computing languages.

Programming Tasks. These will be set throughout the course to cover a minimum total of twenty hours' worth of taught programming lessons throughout the course.

Assessment

The entire scheme of learning for Computer Science is housed within our class Teams. This allows for 24/7 learning and student access to expert video tutorials, electronic worksheets and teacher feedback at any point.

Both of the first two units are weighted at 50% of the overall GCSE (Computer Systems and Computational Thinking, Algorithms and Programming) and are assessed through a written examination paper at the end of Year 11. In order to emulate the form of assessment in these units, students work towards a terminal written examination at the end of every learning topic (typically every 3 to 4 weeks).

Home Learning is issued which entails the taking of notes from videos on the topic with the aim of improving subject knowledge. Student test scores are then tracked; support and extension sessions are then offered to assist students in their progress.

Preparation and development of programming ability is completed through the use of many Python coding activities based on the fundamental programming constructs of Sequence, Selection and Iteration. The Python programming language is a versatile and user-friendly starting point for students which allows for very impressive programmed tasks.

Possible career path:

There are a huge range of career options available, to name a few: IT Technician, IT Consultant, Computer Engineer, Software Engineer, Analyst, Data Modeller, Systems Administrator, Network Administrator, Software Applications Developer, Programmer, Hardware Specialist, Software and Network Security, and Telecommunications. Programming skills are also heavily used in many Science and financial careers.