ICT - Computer Studies and Computer Science

Computer Studies

Key Stage 3

All students study Computer Studies at Key Stage 3. Students are assessed through both written and practical assessments as well as peer and self-assessment. Throughout Key Stage 3 students will develop the important skill of computational thinking and have the opportunity of using a variety of digital media to work towards becoming digitally literate.

Year 7

Students will follow a programme of study that will investigate ways to use technology safely, modelling to analyse and interrogate data using a variety of functions and formulas. They will use Scratch and Kodu (programming software) to develop coding for games and introduce the concept of flow charts. Students will combine a range of applications to provide a solution to a chosen problem demonstrating how work can be developed. Students will learn and apply Small Basic (programming language). Students will develop skills of planning, testing and evaluating digital products suitable for a given target and audience.

Year 8

Students will continue to develop programming skills using Scratch software. They will investigate what is inside a computer and how it works. Python (programming language) will be used to solve simple problems. Students will be taught the purpose of binary numbers, how they work and be able to convert between binary and decimal. Students will use Flowall to plan, create, test and evaluate a solution to a defined problem. Students will understand web page structures using HTML and create a website using HTML.

Year 9

Students will develop their HTML skills developed in year 8 to create linked webpages using CSS language. They will learn how to use Python (programming software) to solve a variety of computational problems. Students will investigate hardware and software components that make up computer systems, and how they communicate. They will learn how instructions are stored and executed within a computer system using binary and hexadecimal digits. Students will use creative media to combine multiple applications to plan, create, test and evaluate a solution to a given purpose and audience. They will produce an ‘app’ using Application Development software.

Computer Science

Key Stage 4

Content

Students will use high level programming language Python and BYOB.
The course consists of the following subject content:
Programming Concepts, Software Development Lifecycle, Computer Structure, Data Representation, Networking, Databases and the Use of Computer Technology in Society.

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Component 1

50 hours of controlled assessment (2 tasks of 25 hours each). These tasks make up 60% of the marks. The work is internally assessed and externally moderated. Each student should complete two tasks from a choice of four. They work independently to demonstrate their ability to code a solution to a given problem.

Component 2

Formal examination of 1 hour 30 minutes worth 40% of the total marks. All questions are compulsory and vary between a short and extended answer. There is only one tier of entry.

Requirements

Due to the complexity of programming code students must be prepared to think abstractly, problem solve using defined sequences of instructions and be prepared to examine, in minute detail, their code for errors.

Homework

Homework is set and marked regularly and is seen as an essential tool to aid learning in the classroom.

Learning Styles / Additional Information

GCSE Computer Science students must be able to break a problem down into its parts and provide an efficient and effective logical sequence of code to solve the problem. They must communicate this in a clear and appropriate way through written and oral communication;
It is essential that students are able to learn programming code and work independently for their controlled assessment. There are online resources to help students.

Syllabus

The Examination Board is: AQA. The qualification is: Computer Science code 4512

Spiritual, Moral, Social and Cultural Education in ICT:

- Using the internet to ensure that every student makes use of e-mail facilities to work with students from other societies
- Students being able to understand and access other value systems through electronic communications of all kinds
- Students exploring moral issues relating to access when considering the use of large information systems e.g. who should know about criminal records
- Students gaining access to information and resources through CD ROM and the Internet, and learning that people throughout history left evidence of spiritual concerns related to religion
- Understanding the use of and limitation of automatic foreign language translators in the understanding of other cultures
- Considering the potential use of identity cards and similar systems, to balance up people's rights and responsibilities.

Staff Contact:

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