FITZHARRYS SCHOOL CURRICULUM SUMMARY

Computer Science

ICT and computing have never been more important: ICT dominates every aspect of the world in which young people are growing up and it is through computing that we create the electronic and online products that we all use. We don't just aim to teach students the skills they need to use IT in their everyday and working lives. We explore how computers have changed the world around us and how emerging technology is likely to affect the world in next few years and in the future. We also aim to give them the skills to solve problems and write simple programs so that they can be creators as well as users of IT. Lastly, we aim to help them understand the impact of IT and the moral and ethical issues in using IT.

The computing department is well-equipped, providing students with access to modern equipment and software. The department has a suite of two ICT rooms, each equipped with 32 modern workstations and a data-projector. We give students access to a wide range of general and subject specific software. Moving beyond the traditional diet of word-processing, spreadsheets and databases, the department offers students the chance to develop web-design skills, to undertake computer programming projects, to learn how computers work and to understand some of the issues surrounding IT, all in a series of "real-world" projects. Most of the scheme of work is presented electronically, and increasingly on the school's learning platform.

The department aims to turn out students who are confident in their ability to select the right tool for the job, skilled in analysing the needs of their users and the purpose of their work and independent enough to tackle challenging problems. Most importantly, we want our students to be able to create their own solutions to problems.

KS3

Year 7

Our curriculum builds on students' achievements at primary school, introducing new skills and new contexts. Students study six units in the year.

- Introduction: school network, folder and file management, e-mail systems, epraise
- E-Safety: Cyber bullying and Staying safe online
- Programming with Scratch
- Understanding computers (Under the hood): hardware, binary numbers and storage units
- Introduction to Spreadsheets - charts and graphs
- The History of Computers
- Programming with KODU (KODE IT).

Year 8

The Year 8 curriculum develops students' skills further, and introduces more programming.

- E-Safety: Social and anti-social networking, Cyber bullying and Staying safe online
- Website development: Introduction to HTML and CSS, creating multiple webpages; formatting web pages; adding text; images and hyperlinks to a web page
- Computer Systems
- Binary: converting denary to binary and vice versa, binary addition and converting ASCII text
- Ciphers and Encryption: Crack the code
- Spreadsheet modelling: operators, formulae, functions (SUM, AVG, IF) formatting and conditional formatting,
- Data representation: images, sound.

Year 9

- Computer systems and networks
- Programming with Python
- Python drawing with turtle
- Data representation, Boolean Logic gates and circuits
- Algorithms - flowchart and pseudocode
- Computational thinking, deconstruction, abstraction
- Social Engineering.

KS4 / GCSE

In Years 10 and 11, students have the chance to study a GCSE Computer Science course. Computational thinking is at the heart of many of today's challenges, in all areas of business and industry. Students don't need to have ambitions to be a programmer to get a huge amount from the course, which teaches them the skills to analyse and solve problems, to think logically and to test solutions systematically.

Students learn key knowledge about how computers work; how computers represent data in different forms; how computers deal with common problems like sorting and searching, and compressing data; how networks work; how cyber-security can be maintained; and what the legal and moral framework for the user of IT is. Alongside this, students learn the key concepts of computer programming using a text-based programming language – by the end of the course they should be able to produce their own small application to solve a real-world problem.

Exam board: AQA

Specification: AQA GCSE Computer Science 8520

- Fundamentals of Algorithms
- Programming
- Fundamentals of data representation
- Computer systems
- The process of software design
- Fundamentals of computer networks
- Fundamentals of Cyber security
- Controlled assessment task
- Ethical, legal and environmental impacts of digital technology on wider society including issues of privacy

In each year group about 30% of the time will be spent developing students' knowledge of key program flow control methods; their ability to use the techniques of structured programming; their knowledge of data structures and their ability to use techniques to write robust code. Their skills in this area are tested in the Coursework assessment in Year 11, and in both exam papers.

Extra-Curricular Opportunities

- Computing Club: KS3 students are challenged to devise their own solutions and strategies to computing problems.
- GCSE Support Lunchtime Club: Students are given help with revision of topics covered during lessons and homework.