

COMPUTING

Curriculum Map:



Key Stage 3

ICT and Computer Science Foundation

The topics in Key Stage 3 Computing give students a foundation in ICT and Computer Science. Students will feel confident using ICT systems in school and in future general employment and will also have the confidence to pursue a GCSE and career in Computer Science. The topics covered are Online Safety, Networks and Programming in Year 7, Games Design, Cyber Security and Binary Mathematics in Year 8 and Programming, Media and AI in Year 9. Students will acquire the programming language, Python, in all years of the course.

Key Stage 4

Subject	Computer Science
Qualification	GCSE
Exam Board	OCR
Course Leader	Mr J Tarlton
Course summary	<p>"Everybody should learn to program a computer, because it teaches you how to think." - Steve Jobs, former CEO and creator of Apple</p> <p>Computer Science is a very practical subject – students will be able to use the knowledge and skills they learn in the classroom on real-world problems. It's also a highly creative subject that calls on learners to be inventive.</p> <p>Students will be proficient in the programming language, Python, by the end of the course.</p>
What will students learn?	<p>The Computer Science curriculum comprises two components at GCSE, Computer Systems and Computational thinking, algorithms and programming.</p> <p>In Computer Systems, students learn about the Central Processing Unit (CPU), computer memory and storage, wired and wireless networks, network topologies, system security and system software. Students will become familiar with the impact of Computer Science in a global context through the study of the ethical, legal, cultural and environmental concerns associated with Computer Science.</p> <p>The Computational thinking, algorithms and programming, students learn about algorithms and programming; including programming techniques, how to produce robust programs, computational logic, translators and facilities of computing languages and data representation. Learners will become familiar with computing related mathematics.</p>

How will students be assessed?	Students will be assessed using two exam papers. Paper 1: Computer Systems and Paper 2: Computational thinking, algorithms and programming. Each paper comprises 50% each to the overall GCSE.
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Key Stage 5	
Subject	Computer Science
Qualification	GCE A Level
Exam Board	OCR
Course Leader	Mr J Tarlton
Course summary	<p>"Computers are incredibly fast, accurate, and stupid. Human beings are incredibly slow, inaccurate, and brilliant. Together they are powerful beyond imagination." - Albert Einstein, physicist</p> <p>A Level Computer Science is an intensely creative subject that combines invention and creativity and can look at the natural world through a digital prism. A Level Computer Science values computational thinking, helping learners to develop the skills to solve problems, design systems and understand the power and limits of human and machine intelligence.</p>
What will students learn?	<p>The Computer Science curriculum comprises two components at A Level, Computer Systems and Algorithms and Programming.</p> <p>In Computer Systems, students are introduced to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also read software development, data types and legal and ethical issues. Students will also develop foundational programming techniques that lead into the Algorithms and programming component.</p> <p>In Algorithms and Programming, students incorporate and build on the knowledge and understanding gained in the Computer Systems component. In addition, students will learn the benefits of applying computational thinking to solving a wide variety of problems, the principles of solving problems by computational methods, algorithms to describe problems and how to analyse a problem by identifying its component parts.</p> <p>Students will also complete a non-exam assessment (NEA) where they build a software application using the skills that they have learnt in the Computer Systems and Algorithms and Programming components.</p>
How will students be assessed?	Students will be assessed using two exam papers and one non-exam assessment. Paper 1: Computer Systems comprises 40% of the total marks Paper 2: Computational thinking, algorithms and programming comprises 40% of the total marks. The NEA comprises 20% of the total marks.