

Computer Science – Curriculum Overview – Topics Covered (Years 7–11)

Year 7 – Foundations of Computer Systems and Computational Thinking

- What a computer system is and how different systems are used
 - Hardware components, including CPU, memory, storage and input/output devices
 - Computer networks (LAN, WAN, PAN) and how devices communicate
 - Security Threats (Malware, Hacking) and Prevention Methods
 - Data representation using binary and digital images (bitmap vs vector)
 - Algorithms (flowcharts) and computational thinking
 - Block-based programming using Micro:bits (Inputs, Outputs, Variables, Selection)
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Year 8 – Data, Systems and Programming Development

- Binary numbering systems and arithmetic
 - Data representation for characters (ASCII and Unicode)
 - Components of a computer system including CPU, Memory and Storage
 - The Fetch-Decode-Execute cycle of the CPU
 - Boolean logic gates (AND, OR, NOT) and Sorting Algorithms (Bubble, Insertion)
 - Block-based programming using Scratch (Variables, Selection, Iteration)
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Year 9 – ICT and Programming skills development and application

- The Cloud and its uses
 - Artificial intelligence – Understanding, usage skills and application
 - Office software skills (Word, Excel, PowerPoint)
 - Flowchart algorithms – Symbols, predicting outcomes and drawing
 - Script-based programming in Python (Sequence, Selection and Iteration)
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Years 10–11 – GCSE Computer Science

- System architecture, memory, storage and system software
 - Data representation, including images, sound and compression
 - Programming fundamentals and more advanced Python programming including; Procedures, Functions, String manipulation, File handling
 - Database skills including use of SQL queries
 - Algorithms, trace tables and Boolean logic
 - Ethical, legal, cultural and environmental impacts of technology
 - Spring Year 11: consolidation, revision and examination preparation
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Overall Curriculum Journey

Across Years 7–11, Computer Science develops students from foundational understanding of computer systems and computational thinking to confident application of programming, data and systems knowledge. The curriculum builds logical reasoning, problem-solving skills and technical accuracy over time, enabling students to understand how digital systems work and how technology impacts society. By the end of Year 11, students are well prepared for further study in computing and related fields, with strong analytical skills and digital literacy.