

GCSE COMPUTER SCIENCE

Computer Science at GCSE follows the Edexcel specification. The bulk of the content is taught in Year 10, with teaching in Year 11 aiming to be completed by February to allow for revision and examination practice. Teaching time each week - in both Year 10 and 11 - is split 60/40 favouring programming. This is to allow students the time to experiment

and 'play' with the concepts learned, both making and correcting mistakes. Alongside the coding teaching, online programming challenges are used, through a curated list of DM:OJ problems, allowing students to access GCSElike competitive coding challenges to further practice their coding skills at home – a vital part of learning to programme.

YEAR 10

| Paper 1: Principles of Computer Science (Theory) | Paper 2: Application of Computational Thinking (Coding) |
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| <p>Topic 1: Computational Thinking</p> <ul style="list-style-type: none">• Abstraction and Decomposition• Algorithms• Truth tables <p>Topic 2: Data Representation</p> <ul style="list-style-type: none">• Number bases (2, 10, 16)• Negative binary• Binary arithmetic and operations• Representing text• Representing images• Representing audio• Data storage and compression <p>Topic 3: Computers</p> <ul style="list-style-type: none">• Hardware• Von Neumann architecture• The CPU• Secondary storage• Embedded systems• Software• Operating systems• Utility software• Developing robust software• Programming languages• Low level programming• Assembly• Levels of programming languages• Translation | <p>Topic 6.1: Developing Code</p> <ul style="list-style-type: none">• Data types• Selection• Repetition• Validation• Mathematical operators• Comparison operators• Logical operators <p>Topic 6.2: Programming Constructs</p> <ul style="list-style-type: none">• Lists• Iteration• Count-controlled repetition• Procedures• Turtle graphics <p>Topic 6.3: Data Types and Structures</p> <ul style="list-style-type: none">• 2D Lists• 2D Iteration• String manipulation <p>Topic 6.4: Input / Output</p> <ul style="list-style-type: none">• Advanced string formatting• Reading text files• String parsing• Reading CSV files <p>End of Year Project: Pokedex</p> |

YEAR 11

| Paper 1: Principles of Computer Science (Theory) | Paper 2: Application of Computational Thinking (Coding) |
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| <p>Topic 4: Networks</p> <ul style="list-style-type: none">• Topologies• IP addresses and Routing• Network speed• Wired and wireless characteristics• Network protocols• 4-layer TCP/IP model• Network security <p>Paper 5: Issues and Impacts</p> <ul style="list-style-type: none">• Environmental• Ethical Legal• Data Protection• Ethics of AI• Intellectual property• Cyber security• Cyber attacks• Cyber defenses | <p>Topic 6.4: Input / Output (cont)</p> <ul style="list-style-type: none">• Writing to text file• Writing to CSV files• String formatting <p>Topic 6.6: Subprograms</p> <ul style="list-style-type: none">• Subprograms• Procedures• Functions• Programming with subprograms• Creating libraries |

