**Computer Science Curriculum Overview**

**Year 7**

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| **Autumn 1** | **Autumn 2** | **Spring 1** | | | **Spring 2** | | | | **Summer 1** | | **Summer 2** |
| **Winter Tracking** | | | | **Spring Tracking** | | | | **Summer Tracking** | | | |
| **ASSESSMENTS** | | | | | | | | | | | |
| **Digital literacy assessment** | **Inside a computer assessment** | |  | | | **Algorithms assessment** |  | | | **Programming assessment** | |
| **Digital Literacy** | **Inside a computer** | | **Computational thinking** | | | **Algorithms I** | **Scratch Programming** | | | **Scratch Programming** | |
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| **Knowledge:**   * Safe and responsible use of ICT * Basic use of Microsoft Office Products * Efficient use of files, folders and an awareness of other storage options * Choosing the most appropriate software for a given project * Effective presentation of work using Microsoft Word and Powerpoint | **Knowledge:**   * Understand the basic operation of a computer and associated hardware for input, process, storage and output. * Understand why computers use binary for both data and instructions and be able to convert denary numbers into binary and vice-versa. | | **Knowledge:**   * What is computational thinking, why is important, and everyday examples that demonstrate it in action. * Decomposition, abstraction and algorithms * Search and sort algorithms | | | **Knowledge:**   * Reading and creating flowcharts | **Knowledge:**   * Scratch introduction, sequencing blocks * Building scripts in Scratch and creating variables. * Operators * Selection and iteration * Using a range of blocks to program a game independently | | | **Knowledge:**   * Learn Scratch, a block-based programming language * Programming project | |
| **Skills:**   * Safe and sensible use of ICT and online services * Choosing appropriate software for a particular task * Effective organisation and safe storage of work * Basic use of Microsoft Office products * Design a presention for a given target audience * Effective use of search engines   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * File * Folder   **National Curriculum coverage:**   * understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns * create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability | **Skills:**   * explain the fetch-decode-execute cycle that a CPU follows * identify and use a range of input and output devices * binary and decimal conversions   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Input * Process * Storage * Output * Binary * Volatile * Primary * Secondary   **National Curriculum coverage:**   * understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems * understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits | | **Skills:**   * be able to break down a problem and create an appropriate solution * recommend a particular search or sort algorithm for a given scenario   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Decomposition * Abstraction * Algorithm   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems | | | **Skills:**   * use logical reasoning to predict outcomes * be able to break down a problem and create an appropriate solution in the form of a flowchart   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Process * Decision * Variable   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem | **Skills:**   * computational thinking and problem solving   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Stage * Backdrop * Palette * Coding * Blocks * Sprite * Costume * Script   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions | | | **Skills**   * computational thinking and problem solving * creativity and resilience   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Stage * Backdrop * Palette * Coding * Blocks * Sprite * Costume * Script   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions * undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users | |

**Computer Science Curriculum Overview**

**Year 8**

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| **Autumn 1** | **Autumn 2** | **Spring 1** | | | **Spring 2** | | | | **Summer 1** | | **Summer 2** |
| **Winter Tracking** | | | | **Spring Tracking** | | | | **Summer Tracking** | | | |
| **ASSESSMENTS** | | | | | | | | | | | |
| **Digital literacy assessment** |  | | **Programming assessment** | | |  | **Data representation assessment** | | | **System security assessment** | |
| **Digital Literacy** | **Algorithms II** | | **Python Programming** | | | **Number representation & Logic** | **Data Representation** | | | **System Security** | |
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| **Knowledge:**   * Safe and responsible use of ICT * Basic and intermediate use of Microsoft Excel * Efficient use of files, folders and an awareness of other storage options * Effective documentation of work on Microsoft OneNote | **Knowledge:**   * Reading and creating pseudocode | | **Knowledge:**   * Learn Python, a high-level text-based programming language * Programming project | | | **Knowledge:**   * Working with binary and hexadecimal number systems * Boolean operators and logic gates | **Knowledge:**   * How characters, images and sound can be represented using binary data * File compression | | | **Knowledge:**   * Network security threats and measures | |
| **Skills:**   * Safe and sensible use of ICT and online services * Effective organisation and safe storage of work * Basic use of Microsoft Office products * Intermediate use of Microsoft Excel   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Excel * Snipping Tool * File Explorer   **Keywords**   * Spreadsheet * Workbook * Sheet * Cell * Formula * Function   **National Curriculum coverage:**   * understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns * create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability | **Skills:**   * use logical reasoning to predict outcomes * be able to break down a problem and create an appropriate solution in the form of pseudocode   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Process * Decision * Variable   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem | | **Skills:**   * computational thinking and problem solving * creativity and resilience   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * IDLE * Snipping Tool * File Explorer   **Keywords**   * Python * IDLE * Sequence * Selection * Iteration * Variable * Data Types * Operators   **National Curriculum coverage:**   * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions * undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users | | | **Skills:**   * binary and hexadecimal operations and conversions * use logical reasoning to predict outcomes * Be able to solve problems involving logic circuits made up of multiple logic gates   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Binary * Hexadecimal * Boolean * Logic   **National Curriculum coverage:**   * understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] | **Skills:**   * computational thinking and problem solving * estimate image and sound file sizes * be able to choose an appropriate file compression method for a given scenario   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Characters * Character sets * ASCII * Unicode * Pixel * Colour depth * Resolution * Analogue * Digital * Sampling * Compression   **National Curriculum coverage:**   * understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits | | | **Skills**   * understand the advantages of connecting computers in a network * explain threats that are posed to a network * explain security measures that make a network safer to use   **Resources:**   * Google Chrome * Microsoft Teams * Microsoft Outlook * Microsoft OneNote * Microsoft Word * Microsoft PowerPoint * Snipping Tool * File Explorer   **Keywords**   * Security * Malware * Virus * Worm * Trojan * Social Engineering * Phishing * Encryption * Firewall   **National Curriculum coverage:**   * understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns | |