



Digital Information Technology Curriculum Overview

At Key Stage 3, our Computing curriculum is designed to empower all learners with the knowledge, skills, and values they need to thrive in a digital world. Rooted in the three pillars of **Computer Science**, **Information Technology**, and **Digital Literacy**, our curriculum nurtures confident, creative, and responsible digital citizens who are equipped to: navigate and shape the digital landscape with confidence, make informed decisions about technology use, and contribute positively to their communities and the wider world.

Building on the broad and balanced foundations of Computing at Key Stage 3, our Key Stage 4 Information Technology curriculum is designed to empower all students to become successful, resilient, and confident digital creators and problem-solvers. Rooted in real-world application and vocational relevance, this curriculum enables learners to thrive in a digitally connected society by developing the knowledge, skills, and values needed to plan, design, create, and evaluate digital solutions that meet the needs of users and organisations.

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1	<u>Foundations of Computing</u> Students will explore key computing concepts, including the difference between the Internet and the World Wide Web, online risks relevant to Wednesfield, and global internet censorship. They will also study core computer hardware components and their functions. Finally, students will gain an understanding of the Data Protection Act and its principles, building awareness of digital safety and responsibility.	<u>Building on Foundations of Computing</u> Apply online safety practices with a focus on issues relevant to Wednesfield. Develop skills in binary by converting between binary and denary and performing binary arithmetic. Explore the concept of cloud computing and understand its benefits in everyday technology use.	<u>Applications of Computing</u> Apply online safety practices tailored to the Wednesfield community. Develop skills in binary multiplication and division. Analyse the legal, moral, and ethical challenges linked to technology use and its development.	<u>User Interfaces</u> Types of user interfaces including text-based, GUI, speech, sensor, and menu-driven. Explores their application across devices such as computers, smartphones, appliances, and embedded systems. Examines factors affecting interface choice, including performance, accessibility, and user needs. Considers hardware and software influences like input methods, screen types, processing power, operating systems, and emerging technologies in interface design. <u>Audience Needs</u> Focuses on how audience needs influence interface type and design. Considers accessibility requirements such as visual, hearing, speech, motor, and cognitive needs. Explores user skill levels from expert to novice, and demographic factors including age, culture, beliefs, and past experiences. Highlights the importance of tailoring interfaces to meet diverse user expectations and capabilities effectively.	<u>Characteristics of Data, Representing Information and Ensuring Data is Suitable</u> The difference between data and information, highlighting how data lacks meaning, structure, and context until processed. Explores how structured, contextualised data becomes useful information. Includes various methods of representing information, such as text, numbers, tables, charts, sparklines, and infographics, with examples of suitable applications. Also focuses on ensuring data is ready for processing through validation methods like range, type, presence, and length checks, as well as verification techniques including proofreading and double entry to improve data accuracy and reliability.

Autumn 2	<u>Foundations of Computing</u> Students will learn to distinguish between system and application software, explore the key provisions of the Computer Misuse Act, and identify examples of computer misuse. They will also study various types of secondary storage, such as HDDs, SSDs, and USB drives, and evaluate their advantages and disadvantages.	<u>Building on Foundations of Computing</u> Explore data security through encryption and steganography. Understand and apply binary and linear search algorithms. Learn how basic logic gates function and use them to create simple circuits. Implement and evaluate the merge sort algorithm to understand efficient data sorting.	<u>Applications of Computing</u> Explore the differences between bitmap and vector images, character sets, and how analog sound is converted to digital. Develop verbal and written chains of analysis while reviewing key concepts and practicing extended response questions and curriculum-based tasks.	<u>Design Principles and Efficient User Interface</u> Focuses on designing efficient and effective user interfaces through key principles such as consistent layouts, readable fonts, suitable colours, appropriate language, and intuitive navigation. Highlights the importance of accessibility, user perception, and retaining attention through features like pop-ups, tip text, and autofill. Emphasises efficiency by using techniques such as keyboard shortcuts, informative feedback, clear buttons, larger interactive objects, and logical placement of related elements. These strategies aim to improve user experience, reduce focus and selection time, and ensure quick, accessible interaction with digital systems.	<u>Data Collection, Quality, Modelling and Security</u> Primary and secondary data collection methods, their strengths, weaknesses, and how collection features affect reliability. Explores factors influencing information quality, such as accuracy, completeness, and format. Highlights how sectors like education, retail, and healthcare use data modelling. Also examines threats to individuals, including privacy invasion, fraud, and misuse of inaccurate or sensitive data stored about them.
Spring 1	<u>Networks</u> Students will explore the purpose and types of computer networks, including star and mesh topologies, assessing their structures, functions, and pros and cons. They will examine peer-to-peer and client-server networks, understanding their advantages, disadvantages, and real-world applications, and learn to compare them to identify suitable use cases.	<u>Networks in Action</u> Identify common network threats and understand their impact on security. Explore protection measures to defend against attacks and analyse real-world data breaches to learn from past vulnerabilities. Reflect on the concept of living "offline" and assess its practicality and consequences in today's digital society.	<u>Python Programming Essentials</u> Refresh core programming concepts while mastering for and while loops for iteration. Learn to define and use procedures and functions to modularize code effectively. Develop skills to identify and debug syntax and logic errors. Apply defensive programming techniques, including error handling with try and except blocks, to create robust and reliable programs.	<u>Project Planning Techniques and Creating a Proposal</u> Planning tools and methodologies to plan, monitor, and deliver digital projects. Tools include task lists, Gantt charts, mood boards, and mind maps. Methodologies such as waterfall, agile, and scrum are explored for their suitability in different project scenarios. Learners also develop project proposals and plans based on given briefs, considering purpose, audience, user input/output requirements, accessibility, constraints, and security. Emphasis is placed on managing timescales, resources, and dependencies to ensure efficient and successful user interface development.	<u>Data Processing and Dashboard</u> Importing data and applying processing methods such as formulas, functions, sorting, and advanced techniques like IF statements and VLOOKUP. Includes using macros, cell referencing, and conditional formatting. Focuses on producing dashboards that summarize data with totals, averages, and percentages, using tables, pivot tables, charts, and interactive controls. Emphasizes clear presentation through formatting, labels, and graphics for effective data interpretation.

Spring 2	<u>Everchanging World</u> Explore recent advancements in AI and their effects across sectors, including modern medicine. Examine how voice assistants like Alexa work and the privacy issues they raise. Understand the use of CCTV and facial recognition in Japan, weighing benefits against ethical concerns. Learn about e-waste, its global impact, and challenges faced by communities like Agbogbloshie, along with possible solutions.	<u>Spreadsheets and number Systems</u> Understand the hexadecimal number system and convert between hexadecimal, binary, and decimal. Use spreadsheets to perform calculations with basic arithmetic and functions like SUM and AVERAGE. Apply the IF function for conditional logic and use lookup functions such as VLOOKUP and HLOOKUP to retrieve data efficiently from tables.	<u>Computing in Action</u> Explore programming languages and their role in instructing computers. Gain hands-on experience with Microbit hardware and coding projects. Develop an understanding of artificial intelligence, its technologies, applications, and broader implications.	<u>Create an Initial Design and Developing a User Interface</u> Focuses on creating an initial user interface design based on user requirements, accessibility needs, and key design principles. Includes producing visual specifications such as storyboards or sketches and identifying necessary hardware and software. Designs aim to improve user confidence, reduce learning time, and enhance usability. Covers developing the interface from the design, applying layout and interaction principles. Learner's review completed interfaces by evaluating strengths, weaknesses, usability, and accessibility, and suggest improvements to better meet audience needs and enhance the overall user experience.	<u>Drawing Conclusions and Presentation</u> Focuses on interpreting data from dashboards to identify trends, patterns, and errors. Examines how presentation methods impact understanding, ensuring information is accurate, unbiased, and clearly communicated to avoid misinterpretation or incorrect conclusions. <u>Wider Implications of Digital Systems</u> Learners explore the wider impact of digital systems, including legal, ethical, and environmental considerations. They study legislation on data protection, computer crimes, and intellectual property affecting organisations and individuals. Responsible use covers data sharing benefits and drawbacks, plus environmental impacts of IT systems. Learners understand policies like acceptable use, net neutrality, and data protection principles. They also examine social/business boundaries, ethical use of intellectual property, and criminal computer misuse. This knowledge ensures compliance with laws and promotes ethical digital practices.
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Summer 1	<u>Computational Thinking</u> Gain a strong grasp of abstraction and decomposition to break down problems effectively. Learn to create and interpret flowcharts to represent algorithms and processes clearly. Understand the structure and purpose of pseudocode, use it to design algorithms, and translate it into working code as part of the programming process.	<u>Big Data</u> Explore methods of data collection from primary, secondary, and automated sources. Understand data mining and pattern recognition techniques. Recognize the role and efficiency of sorting and searching algorithms in big data processing. Study real-world case studies like Tesco Clubcard and Spotify to learn about practical applications, impacts, and ethical considerations of data analysis.	<u>Multimedia Project</u> Learn the role and importance of promotional materials in business. Develop skills to create visually appealing and effective designs for both print and digital formats. Understand how to enhance materials by incorporating sound and video elements where appropriate. Recognize the differences between print and digital design and adapt promotional content to suit each medium for maximum impact and engagement.	<u>Modern Technologies</u> Explores how organisations and stakeholders use modern technologies to communicate, exchange information, and complete tasks. Covers communication technologies, cloud storage, and cloud computing, including access, security, scalability, and collaboration. Examines the impact of technology on team management, inclusivity, and flexible working. Considers infrastructure demands, accessibility features, and legal obligations. Highlights both positive and negative effects on organisations and individuals, including remote work flexibility, mental wellbeing, and the challenges of managing distributed teams across diverse locations and time zones.	
Summer 2	<u>Scratch</u> Develop programming skills using Scratch by working with variables, iteration, and selection to control data and flow. Use arithmetic, comparison, and logical operators in code. Create and use subroutines to simplify programs, and apply these concepts to design, build, and test a simple game.	<u>Introduction to Python</u> Introduce Python programming by applying computational thinking to solve problems. Explore input, output, and variables, perform basic calculations, and use if statements for conditional logic. Extend conditions with logical operators to handle more complex decision-making in code.		<u>Cyber Security</u> Covers the challenges and dangers from increased reliance on digital systems. Explores threats like hacking, malware, phishing, social engineering, and insider risks. Highlights impact such as data loss, financial damage, and legal consequences. Details prevention through access restrictions, firewalls, encryption, antivirus, and ethical hacking. Emphasizes security policies including roles, password rules, acceptable use, and disaster recovery. Covers response actions after attacks: investigation, communication, containment, recovery, and policy updates to protect organisations and stakeholders in various vocational contexts.	

Useful websites to support Independent Study

Key Stage 3

BBC Bitesize Computing
<https://www.bbc.co.uk/bitesize/subjects/zvc9q6f>
 Oak National Academy – KS3 Computing
<https://www.thenational.academy/teachers/programmes/computing-secondary-ocr/units?keystages=ks3>
 Teach Computing (NCCE) KS3
<https://teachcomputing.org/curriculum/key-stage-3>
 Computing at School (CAS) KS3 Resources
<https://www.computingatschool.org.uk/teaching-computing-secondary/teaching-computing-ks3-11-14-years/>
 Code.org
<https://code.org>
 Codecademy
<https://www.codecademy.com>
 Micro:bit Foundation
<https://microbit.org>
 Raspberry Pi Projects
<https://projects.raspberrypi.org>
 Can You Compute?
<https://www.canyoucompute.co.uk/ks3.html>

Key Stage 4

Pearson BTEC Tech Award in Digital Information Technology (Qualification Page)
<https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology-2022.html>
Pearson BTEC Tech Award DIT Specification (2022)
<https://qualifications.pearson.com/content/dam/pdf/btec-tech-awards/information-technology/2022/specification-and-sample-assessments/btec-tech-award-digital-information-technology-spec.pdf>
Pearson Course Materials (Assessment Materials, PSAs, Teaching Resources)
<https://qualifications.pearson.com/en/qualifications/btec-tech-awards/digital-information-technology-2022.html#tab-course-materials>

 BBC Bitesize ICT & Computing
<https://www.bbc.co.uk/bitesize/subjects/zqmtsbk>
 Oak National Academy Computing (KS4)
<https://www.thenational.academy/teachers/programmes/computing-secondary-ocr/units>
 Teach Computing
<https://teachcomputing.org>
 Isaac Computer Science (Useful for cybersecurity, networks and databases)
<https://isaaccomputerscience.org>
 CS Newbs
<https://www.csnewbs.com>
 Seneca Learning
<https://senecalearning.com/en-GB>