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Curriculum Plan

KS3 – Information Technology

Year 9

Golden Threads	Enrichment	Review and Evaluation
Introduction to coding through Python; Web development – designing apps and websites; Intro to cyber security; Development of graphics skills	KS3 Coding Club	Summer 2026

Term 1

Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Basic skills **Introduction to Python** Link to NC unit "Introduction to Python programming" (Y8 Curriculum) • Write simple Python programs that display messages, assign values to variables, and receive keyboard input • Use binary selection (if, else statements) to control the flow of program execution **Python Syntax and Structure**: Pupils should understand the basic syntax of Python, including how to write and format statements. This includes knowledge of indentation, which is crucial in Python for defining blocks of code. **Variables and Data Types**: Pupils should be familiar with creating and using variables and understand basic data types in Python such as integers, floats (decimal numbers), and strings (text). **Basic Operators**: Understanding how to use arithmetic operators (addition, subtraction, multiplication, division) and assignment operators in Python. This knowledge is foundational for performing calculations and manipulating variables.	**Logical Reasoning and Structured Thinking**: Essential for understanding and applying Python's syntax. Pupils must be able to logically structure commands and understand the sequential flow of a program. This skill is crucial for writing coherent and effective code. **Problem-Solving with Algorithms**: To effectively use control structures in Python, pupils need problem-solving skills. They should be able to devise algorithms that break down complex problems into simpler, executable steps, and then implement these using appropriate control structures. **Debugging and Analytical Skills**: Debugging is a critical skill in programming. Pupils need to develop an analytical approach to identifying, isolating, and fixing bugs or errors in their code, often requiring a methodical and patient mindset.	**Name**: T1-Y9-Python1-Assessment **Knowledge fluency**: demonstrate understanding of programming keywords **Python coding skills fluency**: questions online quiz with code for pupils to identify errors, fill in missing lines of code based on a given task to code. **Date**: last lesson of the term	**Misconception**: You Must Be Good at Math to Program in Python **Reality**: While certain areas of Python programming (like data science or machine learning) may require strong mathematical skills, many areas of Python programming do not require advanced math. Basic programming, web development, and automation in Python can often be done with minimal mathematical knowledge. **Misconception**: If the Code Works, It's Correct **Reality**: Just because a Python script runs without errors doesn't mean it's the best or most efficient way to solve a problem. Good programming also considers factors like code readability, maintainability, and efficiency. There are often multiple ways to approach a problem, and part of learning to program is understanding how to write code that is not only functional but also well-structured and efficient. **Misconception**: Variables and Lists Serve the Same Purpose **Reality**: While both variables and lists are used to store data in Python, they serve different purposes. A variable stores a single data value, whereas a list is a data structure that can hold multiple values at once, organized in a specific order. Understanding the distinction between these two is crucial for effective data handling in Python.	Tier 2 vocabulary **Sequence**: The order in which events, actions, or instructions occur. In Python, understanding sequence is crucial for the proper execution of code. **Interpret**: To explain or assign meaning to something. In Python, pupils need to interpret code and error messages to understand how the code behaves or why it fails. Tier 3 vocabulary **Variable**: A name that is used to denote a value that can change. In Python, variables are used to store data that can be manipulated. **Function**: A block of organized, reusable code that performs a single, related action. Functions enhance the modularity and efficiency of the code.	The Python programming skills unit in Key Stage 3 builds upon foundational computational thinking and basic IT skills. It introduces pupils to structured programming, enhancing their problem-solving abilities and logical reasoning. Post this unit, pupils are well-positioned to delve into more complex programming concepts, data science, or even web development.

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	Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Term 2	**Introduction to Python (cont)** **Data representation** Link to NC unit "Data Science" **Control Structures**: Pupils should know how to use if-else statements for decision-making processes in Python. This involves writing conditions that are evaluated to true or false to control the flow of the program. **Loops**: Knowledge of how to use for and while loops to execute a block of code repeatedly. This includes understanding how to iterate over a range of numbers or through the characters in a string. **Functions**: An introduction to defining and using functions in Python. Pupils should understand how to create a function, pass parameters to it, and return values from it. This is important for writing reusable and organized code.	**Function-Based Decomposition**: Understanding the concept of functions in programming requires the ability to decompose larger problems into smaller, manageable units. Pupils should be able to create modular code using functions, enhancing code reusability and readability.	**Name**: T2-Y9-Python2-Assessment **Knowledge fluency**: demonstrate understanding of programming keywords **Python coding skills fluency**: questions online quiz with code for pupils to identify errors, fill in missing lines of code based on a given task to code. **Date**: lesson before last –of the term	**Misconception**: Functions and Procedures are Interchangeable Terms **Reality**: In Python, the term 'function' is more commonly used and refers to a block of code that performs a specific task and can return a result. While 'procedure' is a term used in some programming languages with a similar concept, in Python, everything is technically a function, even if it doesn't return a value (in other languages, these might be called 'procedures' or 'subroutines').	Tier 2 vocabulary **Analyse**: To examine something methodically and in detail. In programming, this often involves breaking down code to understand its function and purpose. **Evaluate**: To judge or determine the significance, worth, or quality of something. Evaluating code involves assessing its efficiency, readability, and suitability for solving a given problem. Tier 3 vocabulary **Loop**: A sequence of instructions that is continually repeated until a certain condition is reached. In Python, common loops include for and while loops. **List**: A built-in Python data structure that is mutable and can contain elements of different data types. Lists are fundamental for managing and organizing data in Python.	Python coding transitions pupils from basic computer literacy to a more profound understanding of coding, thus equipping them with essential skills for the increasingly digital world and preparing them for advanced computer science studies.

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Term 3	**AI** Introduction to Artificial Intelligence (AI) and its various branches, with a focus on machine learning as a core component. Pupils will explore the ethical considerations surrounding AI, discussing issues such as bias, privacy, and the societal impact of AI technologies. Specific applications of AI will be examined, including image recognition, understanding how computers "see" and interpret visual data. The concept of the Turing Test will be introduced as a historical measure of machine intelligence. Finally, pupils will learn about chatbots and AI image generation, understanding the underlying principles and practical uses of these emerging technologies.	Developing critical thinking skills to evaluate the capabilities and limitations of AI systems, as well as their societal implications. Pupils will enhance their analytical skills by examining examples of AI in use and understanding the processes behind them. Ethical reasoning will be a key skill, enabling pupils to consider the moral dilemmas and responsibilities associated with AI development and deployment. Abstract thinking will also be crucial for grasping complex concepts like machine learning algorithms and how AI systems "learn."	**Name**: T3-Y9-AI-Assessment **Content**: **Knowledge fluency**: demonstrate understanding of key terms and concepts related to Artificial Intelligence. It will also assess their flexibility of knowledge and application by analysing AI applications, evaluating ethical implications, and demonstrating understanding of concepts like image recognition and chatbots. The assessment is scheduled for the last lesson of the term.	The belief that AI is exclusively about sentient robots or sci-fi concepts, when in reality, it is integrated into many everyday technologies. AI is infallible and always correct; this unit will highlight the potential for bias and errors in AI systems. Ethical considerations are secondary to technological advancement in AI; the unit will stress the paramount importance of responsible AI development.	Tier 2 vocabulary **Algorithm**: a set of rules for a computer to follow **Bias**: a disproportionate weight in favour of or against an idea or thing, often leading to unfair outcomes in AI **Implication**: the possible results or effects of an action or decision. Tier 3 vocabulary **Machine Learning:** a subset of AI that enables systems to learn from data without explicit programming **Turing Test:** a test of a machine's ability to exhibit intelligent behaviour equivalent to, or indistinguishable from, that of a human **Chatbot:** an AI program designed to simulate human conversation through text or voice interactions **Image Recognition:** the ability of software to identify objects, places, people, writing, and actions in images.	This unit on AI in Year 9 builds upon pupils' foundational understanding of computer science concepts, particularly data representation and programming logic, from previous years. It introduces them to cutting-edge technologies and their societal impact, fostering an awareness of ethical considerations in computing. This knowledge is crucial as it prepares pupils for a future increasingly shaped by AI, equipping them with the critical understanding needed to engage with and contribute to this evolving field in further studies and beyond.

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Term 4

Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Video Pupils will learn about the concept of a target audience, which is the specific group of people a video is designed to reach. They will explore the purpose of a video, understanding that it is the reason for its creation, whether to educate, inform, entertain, inspire, persuade, or promote. The unit will also cover viewer engagement, which is the level of interaction, attention, or emotional involvement a video generates. Pupils will be introduced to A-Roll and B-Roll. Knowledge of common video file formats like MP4, known for its high quality and small file size, will be taught. Pupils will learn about compression, the process of reducing file size while retaining quality , and resolution, the clarity of a video image measured in pixels. Planning tools such as storyboarding, a visual plan outlining the video's sequence of scenes, will be covered. Pupils will also understand the timeline, a graphical representation of video clips for editing , transitions, which smoothly shift between scenes , and rendering, the process of finalizing and exporting a video. The creative concept behind a video, including its theme and style, will be explored , alongside understanding demographics of an audience, the core message a video conveys, the video's appeal to its audience and elements like soundtrack, Foley sound effects, visual/audio effects , and animation. Basic editing actions like trimming and cutting footage, using overlays , arranging sequences , preparing a final cut , and exporting the video will also be included.	Developing analytical skills to understand how various video elements contribute to the overall message and engagement. Pupils will enhance their critical evaluation skills by assessing video quality, purpose, and effectiveness for a target audience. Creative problem-solving will be fostered through the planning and editing processes, where pupils will make decisions on sequencing, transitions, and effects. They will develop technical proficiency in handling video files, understanding the implications of resolution, compression, and file size on video quality and distribution. Storytelling skills will be refined through the use of A-Roll, B-Roll, and visual narrative planning.	**Name**: T4-Y9-Video-Assessment **Knowledge fluency:** demonstrate understanding of key terms related to video production and editing. It will also assess their skills fluency by applying principles of video literacy to plan, create, and edit a short video, incorporating various techniques and understanding file formats and compression. The assessment is scheduled for the last lesson of the term.	The belief that simply recording footage constitutes a good video; this unit will emphasise the importance of planning, editing, and technical considerations. That more effects and animations always make a better video; pupils will learn that thoughtful and purposeful application is key to effective communication. That high resolution automatically means a good video, ignoring aspects like content, purpose, and audience engagement	Tier 2 vocabulary **Medium**: a platform for communication **Audience**: the specific group a video is designed to reach **Purpose**: the reason a video is created **Engagement**: the level of interaction a video generates. Tier 3 vocabulary **A-Roll**: the primary footage **B-Roll**: supplementary footage **MP4**: a popular video file format **Compression**: reducing file size **Resolution**: clarity of image **File Size**: storage space **Storyboard**: a visual plan **Timeline**: chronological arrangement for editing **Transition**: shift between scenes **Rendering**: finalising and exporting a video **Concept**: the creative idea Demographics: audience characteristics **Message**: the information conveyed **Appeal**: attractiveness to audience **Soundtrack**: music and audio **Foley**: added sound effects **Effects**: visual/audio enhancements **Animation**: creating moving images **Trim**: to shorten parts of a video **Cut**: to remove or shorten clips **Overlay**: placing images/videos on top of another **Sequence**: clips arranged in order **Final Cut**: the last version of a video **Export**: saving video for sharing	This knowledge is vital for further studies in media production, digital marketing, and multimedia design, equipping pupils with highly relevant skills for the increasingly visual and digital world

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Term 5

Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Digital graphics -1 • Link to NC unit "Representations – going audiovisual" • Define key terms such as 'pixels', 'resolution', and 'colour depth' • Define 'compression', and describe why it is necessary • Perform basic image editing tasks using appropriate software and combine them in order to solve more complex problems requiring image manipulation **Understanding Image Formats**: Knowledge of various digital image formats (such as JPG, PNG, GIF, TIFF) and their appropriate uses, including the advantages and limitations of each format in different contexts. **Basic Tools and Functions**: Proficiency in using Photopea's basic tools, such as the selection tools, paintbrush, eraser, and text tool, and understanding their applications in creating and editing graphics. **Layers and Composition**: Understanding the concept of layers in digital graphics, including how to create, modify, and manage layers in Photopea. This includes skills in layer manipulation such as reordering, hiding, and blending layers to compose complex images.	**Artistic sensibility and creativity**: to apply knowledge of different image formats, students need an artistic sensibility to choose the format that best suits their creative intention or project requirements. Creativity is essential in envisioning and designing unique and effective graphics. **Technical proficiency with graphic software**: proficiency in using Photopea's tools and functions is crucial. Students must develop the technical skill to navigate and utilize the software efficiently, including mastering various tools for creating and editing digital images. **Organizational skills in digital composition**: applying the concept of layers and composition requires good organizational skills. Students need to manage multiple elements within a digital space, understanding how to effectively layer, group, and arrange these elements to create a cohesive final product.	**Name**: T5-Y9-DigGraphic1-Assessment **Content**: 30 questions online quiz about the Tier 3 keywords, concepts, skills learned this term. **Date**: last lesson of the term	**Misconception**: Digital graphic design is easy and requires little effort **Reality**: There's a common belief that with modern software, creating high-quality digital graphics is easy and requires minimal effort. In truth, effective graphic design requires a good understanding of design principles, creativity, and a considerable amount of practice and refinement. Software tools are just that—tools that still require skill and artistic sense to use effectively. **Misconception**: Graphic design skills are only useful for artists or designers **Reality**: Basic digital graphic skills are increasingly important in a variety of fields, not just traditional art or design careers. Whether it's creating a presentation, a report, a website, or marketing materials, the ability to design effectively can be a valuable skill in many professional contexts.	Tier 2 vocabulary **Contrast**: The difference in luminance or colour that makes an object distinguishable from others within the same field of view. **Perspective**: The technique used to represent three-dimensional objects on a two-dimensional surface in a way that looks natural and realistic. Tier 3 vocabulary **Raster Graphics**: Images created with a grid of tiny pixels, where each pixel represents a colour or shade. Examples include JPG and PNG files. **Vector Graphics**: Images created with lines and curves represented by mathematical formulas, allowing for infinite scalability without loss of quality. Examples include SVG and Adobe Illustrator files.	The digital graphics skills unit in Key Stage 3 builds upon fundamental IT skills, such as basic computer proficiency and introductory software usage. It introduces students to essential design principles, software tools, and creative expression through digital mediums. This unit lays the groundwork for advanced topics in digital media, web design, and interactive multimedia, crucial for the modern digital landscape.

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Term 6

Topics & Substantive Knowledge	Disciplinary Knowledge	Assessment	Misconceptions	Key Vocabulary	Knowledge Tracking
Futuristic Tourist Destination Project Advanced digital graphics techniques, building on prior learning, focusing on image manipulation, composition, and visual storytelling for promotional materials. Pupils will use foundational video editing skills, including sequencing clips, adding transitions, incorporating text overlays, and integrating soundscapes to create engaging promotional videos. A key aspect will be understanding and practically applying the principles of creating and responsibly utilising AI assets, such as AI-generated images, text, or even short video snippets, within their creative project. This involves understanding ethical considerations and prompt engineering to guide AI tools effectively.	Developing advanced creative and design thinking skills, enabling pupils to conceptualise a compelling promotional campaign for their chosen destination. Project management skills will be crucial for planning, organising, and executing a multimedia project that combines diverse digital elements. Pupils will enhance their critical evaluation skills by assessing the quality and suitability of both their own creations and AI-generated assets. They will develop an understanding of media convergence, learning how different digital forms (graphics, video, AI assets) can be seamlessly integrated to achieve a unified and impactful message.	**Name**: T6-Y9-FTDProj-Assessment **Knowledge fluency:** integrate and apply skills in digital graphics, video editing, and the creation and use of AI-generated assets. This will be demonstrated through the completion of a comprehensive project showcasing a tourist destination. The assessment is scheduled for the last lesson of the term.	AI will entirely replace human creativity in digital media; this unit will demonstrate how AI serves as a powerful tool to augment human design. High-quality digital media production requires expensive software; pupils will learn to leverage available tools and AI assets effectively. Simply combining different media types automatically results in a good output; the project will emphasise the importance of thoughtful integration, consistent branding, and narrative coherence.	Tier 2 vocabulary **Converge**: meaning to come together and unite in a common interest or focus **Augment**: to enhance or improve by adding something – Curate: to select, organise, and look after content, particularly for presentation. Tier 3 vocabulary **AI Asset:** digital content (e.g., image, text, audio) generated or assisted by artificial intelligence **Prompt Engineering**: the art and science of crafting effective instructions for AI models **Visual Storytelling**: communicating a narrative through visual media **Media Convergence**: the merging of different forms of media into a single platform or experience.	This "Fantastic Tourist Destination Project" unit in Year 9 provides a capstone experience, bringing together and significantly extending pupils' skills in digital graphics and introducing them to video editing and the cutting-edge use of AI in creative media. It fosters high-level creativity, problem-solving, and critical thinking in a real-world application context. This comprehensive project prepares pupils for advanced studies in digital media, graphic design, and emerging technologies, equipping them with a diverse and highly relevant skillset for future creative and professional endeavours