



SUBJECT: Curriculum Overview

Year 10

Half Term	Topic studied	What will I learn?	How will I be assessed?
Year 10 Autumn 1	Systems architecture Programming	Systems architecture - The purpose of the CPU and the fetch-execute cycle - Common CPU components and their function: ALU, CU, cache and registers - Von Neumann architecture: MAR, MDR, Program Counter and Accumulator - How clock speed, cache size and number of cores affect CPU performance - Embedded systems: purpose and examples Programming (Python) - ongoing - Consolidating sequence, selection and iteration from KS3 - Variables, constants, data types and operators	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 10 Autumn 2	Memory and storage Programming	Memory (primary storage) - The need for primary storage - The difference between RAM and ROM - The purpose of RAM and ROM in a computer system - Virtual memory Storage (secondary storage) - The need for secondary storage - Common types of storage: optical, magnetic and solid state - Suitable storage devices and media for a given scenario - Advantages and disadvantages of storage devices (capacity, speed, portability, durability, reliability, cost) Programming (Python) - ongoing - Reading from and writing to files - Recap of units and data representation from KS3 (binary, hexadecimal, images, sound, compression)	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 10 Spring 1	Computer networks, connections and protocols Programming	Networks and topologies - Types of network: LAN and WAN - Factors that affect the performance of networks - Client-server and peer-to-peer networks - Hardware needed to connect and to form networks - The internet: DNS, hosting and the cloud Wired and wireless networks - Modes of connection: wired Ethernet, Wi-Fi and Bluetooth - Encryption - IP addressing and MAC addressing - Standards Programming (Python) - ongoing - Using SQL to interrogate data - Flowcharts, testing and evaluating	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 10	Network protocols and layers	Protocols and layers	Students are required to flip between

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Spring 2	Network security Programming	- Common network protocols, including email protocols - The OSI model and the concept of layers - Packet transmission and the routes taken by data - The role of servers around the world Network security - Threats to computer systems and networks - Brute-force attacks, denial-of-service (DoS) attacks and data theft - Identifying and preventing vulnerabilities - Encryption, firewalls, anti-malware software, penetration testing and physical security Programming (Python) – ongoing - Building and validating small programs	Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 10 Summer 1	Systems software: operating systems Utility software Programming	Operating systems - The purpose and functionality of operating systems - User interface, memory management and multitasking - Peripheral management and drivers - User management and file management Utility software - The purpose and functionality of utility software - Encryption software, defragmentation and data compression Programming (Python) – ongoing - Using subprograms (functions and procedures) - Using Tkinter to build simple interfaces	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 10 Summer 2	Ethical, legal, cultural and environmental impacts Consolidation and Summer Mock Programming	Impacts of digital technology - Ethical, legal and cultural issues - Privacy laws and the Data Protection Act - The Computer Misuse Act - The Copyright, Designs and Patents Act - Software licences (open source and proprietary) - Environmental impact of digital technology Consolidation and revision - Consolidating Component 01 (Computer systems) Programming (Python) – ongoing - Applying programming skills to an extended task	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded. (Summer Mock Test)