Curriculum Summary Document

Year 10 – *Computer Science*

Exploring and applyling computational thinking, algorithms and programming. Computer Systems, hardware and networks

Module/Unit of Learning	Taught During	What will students learn?	How does this prepare students for success at GCSE?	Links to other Subjects
1.1Architecture of the CPU, CPU Performance, Embedded systems 1.2 Primary & Secondary Storage 2.1 Computational Thinking, Designing and refining algorithms 2.2 Programming Fundamentals	Autumn one	Topic 1: coding fundamentals, Computational thinking and Decomposition. Learners will apply this knowledge to coding tasks to develop their understanding and confidence. They will apply Sequence, selection and iteration in practical activities. Topic 2: Learners will also be introduced to computer hardware – The CPU, Memory and storage. They will explore the factors that affect computer performance	Understanding of how to develop code using an integrated development environment. How to test code works to the requirements. Understanding the hardware that makes up a computer and the effect to performance.	
1.2 Units, Data storage 2.1 Computational Thinking, Designing and refining algorithms 2.2 Programming Fundamentals	Autumn two	Topic 1: How computers represent data, images and sound. Learners will explore why binary is used and practice converting from Binary to denary. Learners will further develop the concept of computer representation to an understanding of how images, sound and characters are stored by computers using Binary. Topic 2: Extending programming practice to include working with strings, arrays and applying iteration.	Understanding how computers represent data in Binary. How humans use Hexadecimal to reduce error Develop coding confidence and practice.	
1.3 Networks and Topologies, Wired and Wireless Networks & protocols	Spring one	Topic 1: Network Topology, hardware and protocols. Learners will gain understanding of the issues and benefits of Star and Mesh topologies and apply this to	Understanding why networks are used, how they are configures using hardware and the issues	

1.5 Utility Software 2.2 Additional Programming Techniques		real world examples. Peer to peer and Client server networks. Topic 2: Utility Software – Learners will gain understanding of Compression software, defragmentation software and encryption software Learners will refine their ability to develop code from a brief. Topic 3: Databases and SQL	and benefits of types of topologies.	
Review and reconnect Computer Hardware, Networks and Programming Fundamentals	Spring two	Review and reconnect to topics covered so far this year. Learners will revisit Computational thinking, Flow diagrams, coding practice representation and Networks.	Learners prepare for assessment by revisiting the topics already covered, highlighting any areas further teaching is required. Practice using past paper questions.	
2.1 Searching and sorting algorithms 2.3 Defensive design and testing	Summer one	Topic 1: Searching and Sorting algorithms Topic 2: Creating robust code. Learners will extend their understanding of what makes maintainable code, how to test and document code Topic 3: Boolean Logic. Learners will explore how Boolean logic is used to plan, test and document logic of real-world problems, and how this is then applied to their code. Topic 4: The role of the Operating System	Understand the concepts of searching and sorting algorithms, practice application of the algorithms to gain confidence. Apply Boolean logic to real world problems. Complete Boolean logic diagrams and Truth Tables	
1.4 Network Threats 1.6 Ethical, legal, cultural and environmental impact 2.1 Computational Thinking	Summer two	Topic 1: Networks threats. Building on the work done earlier in the year on network topology and uses, learners will consider the threats to networks and the ways of protecting from vulnerabilities Topic 2: Computers and Cultural, ethics and the law Practical Programming project: Students will apply their understanding of code development to a programming task.	Develop a wider understanding of the issues around using networks and the ways of mitigating the problems. Develop a wider understaning of how computers affect communities and businesses. Develop confidence in the Software lifecycle by completing an independent project.	