Curriculum Overview - GCSE Computer Science 9-1 (OCR)
Year 10

Students will build on their work undertaken in Computer Science lessons at Year 7, 8 and 9. They will develop an understanding of the architecture used within a computer and how a computer makes use of memory and storage. They will develop an understanding of computers communicating over a network and how to ensure a network remains secure. Students will investigate areas of software and the legal and ethical implications of computer use.

	Half Term 1	Half Term 2	Half term 3	Half Term 4	Half Term 5	Half Term 6
	1.1 Systems Architecture 1.2 Memory and Storage (8 weeks)	1.2 Memory and Storage 1.3 Computer networks, connections and protocols (7 weeks)	1.4 Network Security (6 weeks)	1.4 Network Security 1.5 Systems Software (6 weeks)	1.6 Ethical, legal, cultural and environmental impacts of digital technology (5 weeks)	1.6 Ethical, legal, cultural and environmental impacts of digital technology 2.1 Algorithms (7 weeks)
Knowledge	Components associated with the processor and the mechanisms used by the processor to carry out complex instructions. Forms of secondary storage How computers store data, both numerical and textual. Interpret Binary and Hexadecimal data and convert between them Addition of binary values	How computer systems store complex information such as sound and images. Techniques used to compress data and reduce storage requirements. Hardware and techniques used to network computers. The different techniques used to create networks.	Threats associated with computer networks and how these threats can be prevented.	Threats associated with computer networks and how these threats can be prevented. Operating systems and System software including Defragmentation and Firewalls.	Ethical, Environmental, legal and cultural issues relating to the use of technology	Ethical, Environmental, legal and cultural issues relating to the use of technology Five basic algorithms for searching and sorting data. Use of Pseudocode and flowcharts to represent algorithms
Skills Overview	• Understand the components that make up a computer system • To explain how a processor will interpret instructions • How do computer systems store data • The key methods used to store data • Able to calculate file sizes of image and text files	• Produce images based on binary data • Understand how images and sound are encoded • Calculation of Binary Values • Calculation of HEX Values • Understanding of Binary Shift • The use of ASCII text • Hardware and techniques used to network computers. Topologies	• Understanding of the common forms of attacks on a computer system. • Understand the common prevention methods that can be used to prevent different attacks.	• Understanding of the use of software • Be able to identify different software	• Discuss issues relating to the use of technology and effects on environment and society	•Be able to demonstrate each of the five algorithms • Understand the concepts of Abstraction, Decomposition

Curriculum Overview - GCSE Computer Science 9-1 (OCR)
Year 11

During the year students will build upon the understanding that they have gained from Year 10. Students will develop an understanding of algorithms and their use in program design. Students will develop their programming knowledge using the Python programming language and learn how to make their programs robust. Students will apply Boolean logic to different programs and investigate the different programming languages and IDE's.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5
	2.1 Algorithms 2.2 Programming Fundamentals (8 weeks)	2.2 Programming Fundamentals (8 weeks)	2.3 Producing Robust Programs 2.4 Boolean Logic (6 weeks)	2.5 Programming languages and Integrated Development Environments Revision and Exams (6 weeks)	Revision and Exams (5 weeks)
Knowledge	Five basic algorithms for searching and sorting data. Use of Pseudocode and flowcharts to represent algorithms Key constructs in programming Use of variables The common arithmetic operators The common Boolean operators AND, OR, NOT The use of data types	The use of basic string manipulation The use of basic file handling operations The use of records to store data The use of SQL to search for data The use of arrays (or equivalent) when solving problems, including both one-dimensional (1D) and two-dimensional (2D) arrays How to use sub programs (functions and procedures) to produce structured code Random number generation	Robust programming methods. Implement testing plans and using trace tables. Use of logic to make decisions. Interpret logic diagrams and scenarios Logic diagrams	Types of programming languages and the scenarios in which they are used. Interpreters, Compilers and IDE. Techniques used to develop programming solutions.	
Skills Overview	•Understand how to programmatically implement the key constructs	•Understand how to programmatically implement the key constructs	•Create test plans and use when programming •Use trace tables •Understand Boolean logic •Apply Boolean logic •Interpret Boolean logic diagram	•Understand the differences in programming languages •Be able to determine when and where to use •Identify the features of programming languages	