

Curriculum Overview 5 Years 2021 - Onwards Computer Science

Week	1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21	22 23 24 25 26 27	28 29 30 31 32	33 34 35 36 37 38 39 40
	Autumn 1	Autumn 2	Spring 3	Spring 4	Summer 5	Summer 6
Year 7 IT	Internet Safety Content :Exploring Online Issues: Website Reliability and quality of Sources of Information Safe & Effective Searching Copyright Issues Online Dangers -Strategies to Stay Safe Assessment Method: Multiple Choice Questions		Programming with Kodu Content: language constructs using 'Kodu Blocks' (non-textual approach): Outputs, Variables, Inputs, Selection (IF-ELSEstatements), Conditionals Assessment Method: Multiple Choice Questions	Modeling Data Progress learners from using basic formulas to writing their own COUNTIF statements. Assessment Method: Multiple Choice Question		Small Basic Language constructs using 'text-based" Outputs, Variables, Inputs, Selection (IF-ELSEstatements), Conditionals Assessment Method: Multiple Choice Question
Year 8 IT	Impact of Technology This unit focuses on the enviromental impact of Technology looking at the hazards of E-waste and global impact. Assessment Method: Multiple Choice Questions		What is a Computer Looking at computing systems: from programs and the operating system, to the physical components that store and execute these programs. Assessment Method: Multiple Choice Questions	Introduction to Python The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Assessment Method: Multiple Choice Questions		App design This unit progresses students' knowledge and understanding of programming constructs in a block-based programming environment. Learners will also develop their computational thinking and project planning. Assessment Method: Multiple Choice Questions and Mini Project
Year 9 (Core IT)	Cyber Security The unit will look at the more common cybercrimes such as hacking, DDoS attacks, and malware, as well as looking at methods to protect ourselves and our networks against these attacks. Assessment Method: Students are Only Assessed on Attitude to Learning		Data Science Learners will be exposed to both global and local data sets and gain an understanding of how visualising data can help with the process of identifying patterns and trends. and investigating data Assessment Method: Students are Only Assessed on Attitude to Learning	Python Programming The lessons cover a spectrum of operations on sequences of data, that range from accessing an individual element to manipulating the entire sequence Assessment Method: Students are Only Assessed on Attitude to Learning		Representing going Audio Visual In this unit, learners will focus on digital media such as images and sounds, and discover the binary digits that lie beneath these types of media. Assessment Method: Students are Only Assessed on Attitude to Learning

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Year 9 (GCSE)	Intoduction to Computer Systems In this unit, learners will gain an understanding and knowledge of how computer systems work. Starting with the building blocks of the microprocessor — logic gates — learners will discover how a computer system works and executes instructions. Assessment Method: A mixture of short and long answer question	Introduction to Python Programming GCSE The lessons form a journey that starts with simple programs involving input and output and gradually moves on through arithmetic operations, randomness, selection, and iteration. This is an extension of what students will be studying in CORE IT. Assessment Method: A mixture of short and long answer question	Introduction to Data Representation learners will discover how numbers, letters, images, and sound are represented with 1s and 0s. They will also learn about the factors that impact on the quality of those representations, such as bit depth. Finally, learners will be introduced to the concept of compression and discover how to perform run length encoding and Huffman coding as forms of lossless compression. Assessment Method: Multiple Choice Questions with some short answer questions	Introduction to Networks This unit allows learners to explore how a computer network works from the hardware required to the protocols used for communication Assessment Method: a mixture of short and long answer question	Introduction to the Impact of Technology understanding of the impact of technology on individuals, organisations, and the planet. Through a range of real-world examples, they will learn how to identify the specific type of impact, ie legal, cultural, privacy, environmental, and ethical. They will then progress to identifying stakeholders who are impacted by technology, and learn how these impacts are experienced, negated, or adapted to. Assessment Method: a mixture of short and long answer question	Introduction to Algorithms The main focus of this unit is on searching and sorting algorithms, though other topics are covered, such as computational thinking, flow charts, and tracing algorithms. Learners will have opportunities to analyse, interpret, modify, and implement a range of algorithms. Assessment Method: Multiple Choice Questions with some short answer questions
Year 10 (GCSE)	GCSE System Architecture The unit begins by looking at the various components of the CPU used in the Von Neumann architecture. Subsequent lessons build on the fundamentals covered in Year 9 in our Understanding Computers unit, concentrating on RAM, ROM, cache, registers and the need for virtual memory. The unit concludes by examining the need for secondary storage devices and their practical advantages in given applications. Assessment Method: A mixture of short and long answer question	GCSE Data Representation This unit is a continuation on the Unit students studied in year 9. Students will focus on the conversion of integers from denary to binary, together with simple binary addition, overflow and shifts. The use of hexadecimal numbers and the binary representation of characters is described. Representation of images and sound, and compression techniques. Assessment Method: A mixture of short and long answer question	Gcse Python Programming This unit focuses on the Programming content studied in year 9 and builds on those ideas. Students will focus on more independent projects focsuing on programs involving input and output and and more advanced arithmetic operations, randomness, selection, and iteration. Students will also complete a small Individual Project. Assessment Method: End of topic Project		GCSE Network Security and System Software This unit begins by looking at the threats and vulnerabilities of computer systems and programs, including social engineering and the concept of SQL injection. Encryption and penetration testing are covered as examples of various methods of preventing vulnerabilities. The unit continues to focus on operating systems software, their function and typical utility software programs including defragmentation and compression programs. Assessment Method: A mixture of short and long answer question	GCSE Network Connections and Protocols This unit allows learners to explore how a computer network works from the hardware required to the protocols used for communication students will focus on different connections including WiFi and Bluetooth different Communication protocols HTTP/S, FTP,POP,IMAP and SMP students will also learn about the TCP/IP Protocol Stack. Assessment Method: A mixture of short and long answer question
Year 11 (GCSE)	GCSE Algorithms This unit begins by looking at computational thinking, including abstraction and decomposition. Two lessons are given to interpreting and comparing relevant searching and sorting algorithms including the merge and insertion sorts. These are written in the new OCR Reference Language. Practical experience of writing, tracing and modelling algorithms using pseudocode and flowcharts. Assessment Method: A mixture of short and long answer question	GCSE Programming and Pseudocode This programming unit covers the theoretical aspects of Section 2.2 of the latest J277 OCR GCSE Computer Science specification, covering all the knowledge and skills that students will need to tackle exam questions in Paper 2. The basic programming constructs are covered as well as string manipulation and file handling. Iteration and arrays are subsequently covered, before examining the use of procedures and functions to structure code. Finally, records and the use of SQL to search for data are covered. Assessment Method: A mixture of short and long answer question	GCSE Logic and Language This unit begins with a lessons on Boolean logic diagrams and truth tables. Testing and error handling is covered using practical examples, including the use of the common tools and functions of an IDE. The unit concludes by looking at programming language classifications including translators and low-level languages. Assessment Method: A mixture of short and long answer question	Recap Students will spend the last few week recaping and revising different topics they have covered throughtout the 3 year GCSE. There will also be a focus on paper 2 content.	Paper 1 Computer Systems	Paper 2 Computational thinking, Algorithms and Programming