Curriculum Summary Document

Year 8 - Computing

Module/Unit of Learning	Taught During	What will students learn?	How does this help to build a broad and strong foundation?	Links to other Subjects
Introduction to Cyber Security	**Autumn – Term 1**	This unit takes the learners on an eye-opening journey of discovery about techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks. The learners will start by considering the value of their data to organisations and what they might use it for. They will then look at social engineering techniques used by cybercriminals to try to trick users into giving away their personal data. 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.	The unit aims to build upon students understanding of online safety; linking it to cyber-security more generally. Learners develop an understanding of cyber-threats, the scale of cyber-threats and how systems are protected against them.	CLASS – Online Saftey
Control Systems	**Autumn – Term 2**	Students will understand, design and create algorithms using simulations in FLOWOL. They will use flowcharts to refine algorithms, develop and apply computational thinking skills (abstraction, decomposition, algorithmic thinking: sequence, Selection and iteration; use of sub routines.	This topic will set the scene for the next topic: text-based programming using Python. The skills learned here will be the springboard to inspire confidence for the next step.	
App Design	**Spring – Term 1**	This unit aims to take the learners from designer to project manager to developer in order to create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Learners will work in pairs to consider the needs of the user; decompose the project into smaller, more manageable parts; use the pair programming approach to develop their app together; and	The aim of this unit is to further develop students understanding of problem solving through the application of computational thinking.	

		finish off by evaluating the success of the project against the needs of the user.		
Python Programming	**Spring – Term 2**	This unit introduces learners to text-based programming with 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. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.	This aim of this unit is to equip students with a fundamental understanding of text-based programming from the IDE to iteration. The unit builds upon students learning from the summer term of Year 7.	Math – Algebra through the use of variables Math – application of mathematical operators Math – Boolean Logic
Python Programming	**Summer – Term 1**	This unit introduces learners to how data can be represented and processed in sequences, such as lists and strings. The lessons cover a spectrum of operations on sequences of data, that range from accessing an individual element to manipulating the entire sequence. Great care has been taken so that the selection of problems used in the programming tasks are realistic and engaging: learners will process solar system planets, book texts, capital cities, leaked passwords, word dictionaries, ECG data, and more.	The unit aims to further build upon learner text-based programming skill by allowing them to apply those skill to a number of programming-based projects.	Math – Algebra through the use of variables Math – application of mathematical operators Math – Boolean Logic
Media – Vector Graphics	**Summer – Term 2**	Vector graphics can be used to design anything from logos and icons to posters, board games, and complex illustrations. Through this unit, learners will be able to better understand the processes involved in creating such graphics and will be provided with the knowledge and tools to create their own.	This unit introduces students to data representation in the form of vector graphics. Students develop an understanding of how images are represented on a computer as well as how to edit vector graphics through vector image software	Photography – vector image software Media – Vector image software