Computer Science: Year 9 Option

Term	Year 9 Option		
	Topic	**Knowledge**	**Skills/Assessment**
Term 1	**Introduction to Computer Science**	Basic introduction to algorithms – offline lesson to program a teacher. Apply to standard shapes used in flowcharts to build a program to make a cup of tea.	Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment. At the end of each half-term there will be an assessment on all of the topic's pupils have studied in that block.
	E Safety	Digital Footprints and the impact on wider society. Understanding the impact of Fake News. Disinhibition Creating a safe online space Moral dilemmas	
Term 2	**System Architecture**	Roles of each computer component How each component effects performance of a computer Effects on performance if components are upgraded Suitable specifications for different applications. Process of building a computer system Software types, applications, utility programs and operating systems. Software for a specific purpose. Use this information to build a paper computer	Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment. At the end of each half-term there will be an assessment on all of the topic's pupils have studied in that block.
	Computer Networks	Introduction to the two types of networks (LAN & WAN) How the internet works & modes of connection Understand how different topologies work The role of the client server network and real-world application Overview of encryption alongside common protocols	
Term 3	**Data Representation**	Understand the units of data storage: bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte How data needs to be converted into a binary format to be processed. Introduction to 8-bit binary calculations, shifts and hexadecimal conversions Pixel image representation, metadata, colour and sound effects on data Understanding of different compression techniques	Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment. At the end of each half-term there will be an assessment on all of the topic's pupils have studied in that block.

	Scratch Programming	Following guides to create a program. Debugging programs that don't work Manipulating programs to change its behaviours. Applying computational thinking skills. Create programs from a brief using a block-based programming language. Use decomposition to create a program.	
	Introduction Python Programming	Following guides to create a program. Debugging programs that don't work Manipulating programs to change its behaviours. Applying computational thinking skill gained in a graphical programming to command line programming. Create programs from a brief using a command line programming language. Use decomposition to create a program.	
	Sequencing of data	Learning how to create and navigate through lists in Python. Understand the similarities between lists and strings. Create programs from a brief using while and for loops alongside variables to perform common operations on strings and individual characters	
	Physical computing	Understand what a micro:bit is. Use a development environment to write, execute and debug a Python program whilst following, revising and refining a project plan.	