

Curriculum Area: Computer Science



		Autumn1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7		Intro to school systems 4 lessons Students will learn the basics of the school computer system. This will include how to log on, the Office 365 system and Microsoft Teams. They will also be shown the most efficient ways to work with MS Office products.	Intro to computational thinking and algorithms Introducing abstraction, decomposition and pattern matching and then teaching students about how algorithms are used to plan tasks.	Flowal These lessons will introduce the students to Flowal program. They will learn more about sequencing and algorithms.	Scratch projects Students will continue to learn about algorithms and implement these concepts in Scratch programs.	Scratch projects Students will continue to learn about algorithms and implement these concepts in Scratch programs.	Microbit programming This unit of work will introduce students to the concept of block based programming through the BBC micro:bit and other online websites. They will investigate the micro:bit through the website and the worksheets and uses various websites to learn about block based programming.
	Assessments						

Year 8 CS		Physical computing 4 lessons Students will learn about input, output and storage, the internal components of a computer and the equipment needed to build a network.	COMPUTER SCIENCE Binary maths 4 lessons This unit will provide students with an introduction into how computer systems work with and store data using the binary number system. We will begin by looking at how binary numbers work and how they can store decimal numbers using a number of bytes. We will carry out examples of binary number conversions. Students will then look at how we can add binary numbers using a specified set of rules and the concept of two's-complement. Finally, we will look at how computer systems can then use this Binary number system to store a range of different data types such as text/images/sound	Python Programming 3 lessons Students learn about assignment selection, and iteration. They will also learn about data structures in the form of lists. The context for this will be using the Python Turtle module.	Python Programming 3 lessons Students learn about assignment selection, and iteration. They will also learn about data structures in the form of lists. The context for this will be using the Python Turtle module.	Photoshop 3 lessons	Photoshop 3 lessons
	Year 8 IT		History of Computing 2 lessons	Physical computing 2 lessons Students will learn about input, output and storage, the internal components of a computer and the equipment needed to build a network	IT PowerPoint 3 lessons	IT PowerPoint 3 lessons	Photoshop 3 lessons
Assessments							

a	Emerging technologies 8 lessons	Video Editing 8 lessons	Networks 7 lessons	Complete networks and start SDLC 6 lessons	SDLC 5 lessons	SDLC 7 lessons
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		<p>This unit of work will introduce students to how advances in technology are shaping our lives. They will look at tech that is currently being used in addition to investigating technology which is in development. This is a discussion led unit of work and is designed to engage the pupils and create interest in the topics.</p>		<p>This unit of work will introduce students to the concept of networking and will develop their current understanding of internet safety. The context of the unit will be centred around setting up a network, using networked applications and getting the pupils to reflect on how safe they are online. Lessons 1 to 3 will be based upon setting up a network and giving the students' knowledge about why networking is important and what equipment is necessary. Lessons 3 to 6 will develop the students' awareness of network and online safety. Lessons 7 to 10 will stretch the students to think about networking in areas that they may be unfamiliar with.</p>	<p>Students will learn about how software is created. They will learn that all projects start with investigation and planning before any coding takes place.</p>	<p>Students will learn about how software is created. They will learn that all projects start with investigation and planning before any coding takes place. Students will then move onto the coding phase.</p>	<p>Students will learn about how software is created. They will learn that all projects start with investigation and planning before any coding takes place. Students will then move onto the coding phase. The students will then learn about testing, evaluating projects and producing user documentation.</p>
Assessments							

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10		<p>Data representation</p> <p>Students will learn about decimal, binary and hexadecimal number bases and the units of measure coputers use. They will learn that binary numbers can be added together and a binary shit can be used to multiply numbers. They will then learn about how images, sound and text are represented and how these are compressed.</p> <p>Followed by Hardware and systems This is unit will cover a large number of different aspects associated with the computer hardware structure. We will look firstly at the structure of the CPU including the Von Neumann architecture, the role of main memory and individual components of the CPU. We will look at what aspects of the CPU architecture can impact the performance of the CPU. We will look at the Fetch-execute cycle and consider what is happening at each stage. We will then progress to look at memory and secondary storage and their differences ensuring that we cover a wide range of storage types including cloud storage. We will look at the advantages and disadvantages of each of these storage methods and when each one is likely to be used.</p>	<p>Hardware and Systems</p> <p>Continue with hardware and systems from Autumn 1</p> <p>Algorithmic thinking Students will start by learning about computational thinking. They will then learn about how problems can be solved by representing them as algorithms in the form of flow charts and pseudocode. We will focus on two sorting and two searching algorithms. Trace tables will be taught for the first time.</p>	<p>Programming theory</p> <p>Students will learn the following topics: Selection, iteration and assignment. Data structures Operators File handling String handling Random numbers Functions Robust programming Classification of programming languages.</p>	<p>Programming theory and practice</p> <p>Students will learn the following topics: Selection, iteration and assignment. Data structures Operators File handling String handling Random numbers Functions Robust programming Classification of programming languages.</p> <p>They will then practice their programming in a mock programming project</p>	<p>SDLC and then start programming project</p> <p>Students will learn about the software development cycle. Students will work on the AQA programming project.</p>	<p>Programming project</p> <p>Students will work on the AQA programming project.</p>
	Assessments						

Year 11	Networks	Cyber security and recap for trial 2	Legal moral and ethical	Algorithmic thinking	Recap for exams	
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		<p>This unit covers a large number of different topic areas that are all interlinked. The unit will start by looking at the idea of a computer network and why we use them, we will look at both the advantages and the risks that arise from their use. We will then consider the different types of computer network and discuss some of the network topologies that can be used. We will finish this unity by considering the differences between wired and wireless networks. The unit then moves onto protocols and then how to secure networks</p>	<p>This unit will look at what we mean by cyber security and why it is so important for managing today's computers. We will then look at a range of different cyber security threats that need to be managed and consider how these work and the possible impact that they can have on the computer systems that they are infecting. We will look at the terms social engineering & penetration testing and identify what each means and the areas that it covers. This unit will also look at the different security measures that can be implemented to help detect a cyber security threat and to help prevent any negative impact. A wide range of different measures will be covered such as password systems, anti-virus, email scanning, biometric etc</p>	<p>Students will learn about the legal, moral and environmental impacts of computers on society. They will apply this knowledge and consider how it affects networks and cyber security.</p>	<p>The focus will be on relooking at writing pseudocode and tracing algorithms through trace tables.</p>	<p>This half term will be made of a variety of revision exercises</p>	
Assessments							