"To equip our students with the knowledge to be skilled consumers and expert creators in our digital, connected world."

	Foci	**Assessment**	**Knowledge Organiser**
Year 10 Term 1	**1.2.4 Storing data – numbers, text, images, sound** **1.2.5 Compression** **2.4.1 Boolean logic** **2.2.1 Programming - fundamentals**	Convert between binary / hex / denary numbers. Use ASCII table to convert text to binary. Describe digital image; pixels, colour depth, resolution. Describe digital sound sampling process. Describe benefits of compression and compare / recommend use of lossy and lossless compression. Create truth tables for OR, AND and NOT gates. Use combination of 3 gates, draw circuit diagrams and solve with truth tables. Create Python programs. Use and describe key concepts of sequence, selection and iteration (count and condition controlled)	

Year 10 Term 2	**1.1.1 Architecture of the CPU**	Fetch decode execute cycle. Explain function of CPU components; ALU, CU, cache, registers. Describe register used in Von Neumann architecture model.	
	1.1.2 CPU performance	Explain how common characteristics affect performance in different ways; Clock speed, cache size, number of cores.	
	1.1.3 Embedded systems	Describe and give examples of embedded systems.	
	1.2.1 Primary storage (memory)	Explain the need for primary storage, the difference between RAM and ROM. Describe the purpose of RAM, ROM. Explain the need for virtual memory and use (moving pages in/out of VM).	
	2.1.2 Designing, creating and refining algorithms.	Be able to represent algorithms in flowcharts and pseudocode(OCR reference language). Be able to identify inputs and outputs. Be able to trace a program and identify common errors.	

Year 10 Term 3	1.2.2 Secondary storage	Understand the need for secondary storage. Compare and recommend secondary storage types (magnetic, optical, solid state) based on their characteristics (capacity, data access speed, portability, durability, cost)	
	1.3.1 Networks and topologies	Compare LAN and WAN networks. Compare client-server and peer-to-peer networks. Topologies, star and mesh. Describe the function of network hardware; router, switch, WAP, NIC. The internet; explain the function of DNS, benefits / risks of cloud storage/computing.	
	1.3.2 Wired and wireless networks	Benefits / disadvantages of wired (Ethernet) and wireless (WiFi). Common protocols (TCP/IP, HTTP(S), FTP,POP, IMAP, SMTP. The benefits of layers in TCP/IP.	
	2.2.3 Additional programming techniques.	Be able to manipulate strings; split, concatenate. Use file storage from programs. Using 1D and 2D arrays, navigate, print and update the data. Use random number generation (lottery picker).	
	Year 10 exams.		

	Foci	Assessment	Knowledge Organiser
Year 11 Term 1	**1.4.1 / 1.4.2 Threats to systems and networks, preventing vulnerabilities**	Describe various forms of attack (e.g. malware, social engineering..) Explain how to prevent vulnerabilities (link to forms of attack).	
	1.5.1 Operating systems	Describe the purpose and key features of operating systems: User interface, memory management, peripheral management, user + security management.	
	1.5.2 Utility software	Explain the nature of utility software and describe examples (e.g. defrag. Encryption, compression).	
	1.6.1 Ethical, cultural and environmental impact.	Answer longer answer questions with a balanced argument. Explain purpose of IT legislation.	
	2.3.1 Defensive design of code	Anticipate misuse and design validation to prevent it. Produce maintainable code, indented layout, meaningful variable names, comments.	
	2.5.1 Languages	Be able to compare attributes fo high and low-level languages. Explain the differences between types of translators; compiler, interpreter.	
	2.3.2 Testing	Explain the purpose of testing. Explain and compare syntax and logic errors. Select appropriate test data for final product testing.	
	Year 11 mocks #1 (Nov)		

Year 11 Term 2	2.1.3 Searching and sorting algorithms	Be able to demonstrate the steps of a linear and binary search. Describe the pseudocode steps for each. Be able to demonstrate the steps of a sorting algorithm: Bubble sort, merge sort, insertion sort. Describe the pseudocode steps for each.	
	Programming / algorithm revision	Solve OCR code challenges in pseudocode and Python.	
	Year 11 mocks #2 (March)		
Year 11 Term 3	Revision and exams Year 11 GCSE exams.		