



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

Year 10 Term 1	Foci	Assessment	Knowledge Organiser
	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)	



<p><b>1.1.1 Architecture of the CPU</b></p> <p>1.1.2 CPU performance</p> <p>1.1.3 Embedded systems</p> <p>1.2.1 Primary storage (memory)</p> <p>2.1.2 Designing, creating and refining algorithms.</p>	<p>Fetch decode execute cycle. Explain function of CPU components; ALU, CU, cache, registers. Describe register used in Von Neumann architecture model. Explain how common characteristics affect performance in different ways; Clock speed, cache size, number of cores. Describe and give examples of embedded systems. 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). 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.</p>	
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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).

2.2.3 Additional programming techniques.

The benefits of layers in TCP/IP.  
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.



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



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