



Computing and ICT						
	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	Introduction to E-Safety	Introduction to Spreadsheet Modelling	Word Processing	Scratch Programming	Digital Graphics	Project
Year 8	Social Media and Cyberbullying	Computer Systems	Web Design & HTML	Databases	2D Animation	Python Basics
Year 9 Computer Science	System architecture	Software	Data representation	Sound images	Logic	Algorithms
Year 10 Computer Science	Networks	Protocols	Operating systems and software	System security	Ethics and law	Programming
Year 11 Computer Science	Programming	NEA	NEA	Hardware Software Legal	Data Logic	Constructs Algorithms



Computer Science – Year 9

Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to reformed GCSE Content
<p>Explain the CPU process and the Fetch-execute cycle. Explain Von Neumann architecture and components fetch, decode and execute instructions.</p> <p>Explain software and give examples of system software, explaining how they work and how they help maintain computers.</p> <p>Understand how sound and images are stored digitally and be able to explain how file sizes can be altered with the compression.</p> <p>Explain why computers use binary and be able to convert to hexadecimal and binary and back to denary. Evaluate different character sets and why we need multiple sets.</p> <p>Explain the need for system security and give examples of system security.</p> <p>Explain what an algorithm is and give examples of search and sort algorithms. Evaluate and use the process of each of the algorithm.</p>	<p>Reading</p> <ul style="list-style-type: none"> Information from the internet and summarise into own words <hr/> <p>Numeracy</p> <ul style="list-style-type: none"> Calculations Binary Hexadecimal <hr/> <p>Oracy and Literacy (including key words for practical subjects)</p> <ul style="list-style-type: none"> Key terminology Student discussion Student role play with algorithms Written and extended questions 	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Low stakes quizzing</p> <p>Exit Strategies</p>	<p>2 assessments throughout the academic year</p> <p>1 PPE</p> <p>Topic tests for each completed unit.</p>	<p>CPU</p> <p>Software</p> <p>Binary</p> <p>Algorithms</p>



Assessment Skills, Knowledge and Concepts Map (These need to be mapped backwards from GCSE and ensure that all students can access their target percentage) – what do all students need to achieve in year 9 to be able access their target grade and be on track for their year 11 target grade?

Computer Science – Year 9		
Key Learning Questions	System architecture	Literacy and Numeracy
<ul style="list-style-type: none"> • What is the CPU? • What is the difference between MAR and MDR? • What does the Cache, CU and ALU do within the CPU? 	<ul style="list-style-type: none"> • Explain the CPU process • Explain Von Neumann • Describe the role of components within Von Neumann 	<ul style="list-style-type: none"> • Reading facts and definitions. • Student discussion and responses to questions.
Key Learning Questions	Software	Literacy and Numeracy
<ul style="list-style-type: none"> • What is software? • What is an operating system and utility software? • Explain a defragmenter and antivirus 	<ul style="list-style-type: none"> • Explain software • Give example of system software • Describe how software utilities work 	<ul style="list-style-type: none"> • Reading facts and definitions. • Student discussion and responses to questions.
Key Learning Questions	Sound and images	Literacy and Numeracy
<ul style="list-style-type: none"> • How is sound stored digitally? • How is an image stored digitally? • What is colour depth and resolution? • How does sampling affect the file? 	<ul style="list-style-type: none"> • Explain how sound and images are stored • Demonstrate how an image is stored • Explain how file sizes can be altered 	<ul style="list-style-type: none"> • Calculating file size and colour depth • Taking samples of data
Key Learning Questions	Data representation	Literacy and Numeracy
<ul style="list-style-type: none"> • Why do computers use binary? • How do you convert to binary and hexadecimal? • What is the difference between Ascii, extended Ascii and Unicode? 	<ul style="list-style-type: none"> • Explain why computers use binary • Convert to hexadecimal • Evaluate different character sets 	<ul style="list-style-type: none"> • Calculations in binary • Converting to hexadecimal • Converting to binary
Key Learning Questions	System security	Literacy and Numeracy
<ul style="list-style-type: none"> • What is system security? • Why do we need system security? • What are some examples of system security? 	<ul style="list-style-type: none"> • Give examples of system security • Explain the need for system security • How does system security work? 	<ul style="list-style-type: none"> • Student using key terminology
Key Learning Questions	Algorithms	Literacy and Numeracy



- What is a search and a sort used for?
- How does merge, insertion and bubble sort work?
- How does binary and linear search work?
- Which is the most inefficient?

- Explain what an algorithm is
- Give example of search and sort algorithms
- Explain and use the process of each of the algorithms

- Searching and sorting number/alphabetical data
- Calculating the most efficient sort/search algorithm