

Subject Curriculum – GCSE Computer Science Y10

	Autumn Term	Spring Term	Summer Term	
Big Ideas &	HT1	HT3	HT5	
Big Ideas & Purpose	 Autumn Term HT1 This unit of work is the foundation of the course and looks at the architecture of the modern computer. Pupils will: Understand what the CPU of a computer does. Know what the registers in a CPU are. Know the stages of the fetch, execute cycle. Know the stages of the fetch, execute cycle. Know the components of the CPU. Know the components of the von Neumann architecture. Understand what is meant by the term embedded system and give examples of embedded systems. HT1/HT2 Developing on the skills from HT1 pupils will study different aspects of memory and storage. Pupil will learn:	 Spring Term HT3 Building on skills from HT1 and HT2, pupils will study different aspects of networking. Pupils will learn about: What LAN's/WAN's are Star and Mesh topologies Factors affecting the performance of a network. About Client/server and peer to peer networks The Cloud Network hardware Hosting, internet, DNS WIFI/Bluetooth Encryption IP/MAC addresses Protocols and Layers HT4 This half term pupils will look at systems security. Systems security is subdivided into two sections. Threats to computer systems and networks Identifying and preventing vulnerabilities It builds upon pupils prior learning covered in the networks unit and links back to learning in KS3 covered in the Crime and Security unit of work. 	 Summer Term HT5 This half term students will look at systems software: Pupils will: Understand the purpose and functionality of operating systems. Understand the purpose and functionality of utility software. Understand what utility system software is. HT6 This half term students will look at 1.6 ethics. The ethical unit is subdivided into four topics. It builds on students' knowledge of all aspects of computing looking at the following areas: Ethical Legal Cultural Environmental The unit encourages students to apply their knowledge of the world thinking of the possible implications of using technology. The unit develops students' ability to think through different situations, scenarios considering the implications. Students will develop their extended writing skills to answer questions around these topics.	
	 The purpose and differences in primary memory. The purpose and difference in secondary storage. The characteristics of secondary storage. The representation of binary units in computer science. Binary & hexadecimal number systems. The representation of characters, images and sound using binary. The purpose and methods of compression. 			

Programme of	HT1	HT2	НТ3	HT4	HT5	HT6
Study	J277 GCSE Computer	J277 GCSE Computer	J277 GCSE Computer	J277 GCSE Computer	J277 GCSE Computer	J277 GCSE Computer
	Science	Science	Science	Science	Science	Science
Key Assessments	HT1 1.1 Systems Archi	itecture J277 (20 marks)	HT3 1.3 Computer net	works, connections and	HT1 1.5 Systems softw	vare (20 marks)
	HT1/2 1.2 Memory an	d Storage (4 Tests 20	protocols (20 marks)		• HT6 1.6 Ethical, legal, cultural and environmental	
	marks each assessment)		HT4 1.4 Network security (20 marks)		(20 marks)	
					HT6 J277/01 Computer systems (mock exam)	
					HT6 J277/02 Computational thinking, algorithms	
					and programming (mock exam)	
Key skills	Maths	Maths	Maths	Maths	Maths	Maths
	 Programming 	 Programming 	Programming	Programming	Programming	Programming
	Theory	Theory	Theory	Theory	Theory	Theory
	 Problem solving 	 Problem solving 	 Problem solving 	Problem solving	Problem solving	Problem solving
	Logic	Logic	Logic	Logic	• Logic	Logic
	Memory	Memory	Memory	Memory	Memory	Memory
	 Exam technique 	Exam technique	Exam technique	Exam technique	Exam technique	Exam technique
Links to careers	 Programmer 	Programmer	Programmer	Programmer	Programmer	Programmer
	Computer games	Computer games	Computer games	Computer games	Computer games	Computer games
	developer	developer	developer	developer	developer	developer
	Computer games	Computer games	Computer games	Computer games	Computer games	Computer games
	tester	tester	tester	tester	tester	tester
	Software developer	Software developer	Software developer	Software developer	Software developer	Software developer
	App developer	App developer	App developer	App developer	App developer	App developer
	IT trainer	IT trainer	IT trainer	IT trainer	IT trainer	IT trainer
	Solutions architect	 Solutions architect 	Solutions architect	Solutions architect	 Solutions architect 	 Solutions architect
	Test lead	Test lead	Test lead	Test lead	Test lead	Test lead
	Technical author	Technical author	Technical author	Technical author	Technical author	Technical author
	Technical architect	Technical architect	Technical architect	Technical architect	Technical architect	Technical architect
			 Network manager 	 Network manager 	Network manager	
			Network engineer	Network engineer	Network engineer	



Subject Curriculum – GCSE Computer Science Y11

	Autumn Term	Spring Term	Summer Term	
Big Ideas &	HT1	НТЗ	HT5	
Big Ideas & Purpose	 HT1 Pupils have already learnt some of the basics of programming but within this unit will explore them in further depth. Pupils will learn the following: The 3 basic programming constructs. The different variable data types and the need for casting. The arithmetic and Boolean operators. Understand how to use basic file handling operations. Understand the SQL commands: 	 HT3 Now that pupils have a good understanding of how programs created students will looking into algorithms. Pupils will learn: What abstraction and decomposition are and how they are used within computing. Understand several different sorting algorithms and searching algorithms. Understand how to create an algorithm. The different symbols used in a flowchart. Understand what a syntax/logic error is. 	HT5 Revision Real GCSE exams HT6 Students have completed Computer Science	
	 Understand list/array's Understand procedures and functions. Understand how to use import random. HT2 Pupils will develop their skills further by	 HT4 Pupils will look further at computational logic and IDE's. Pupils will learn: How to make simple logic diagrams from 		
	 understanding how to produce robust programs. Pupils will learn: Know what is meant by the term "defensive design considerations" when writing programs. Understand why input validation is necessary and a range of validation techniques. Understand what programmers can do to make their code more readable. Understand how to refine algorithms to make 	 Boolean expressions using AND, OR, NOT. Understand how to complete truth tables Understand how to create, complete or edit logic diagrams and truth tables for given scenarios. The characteristics of high level and low- level programming languages. Understand the terms: source code, assembly code and machine code What a translator does. Understand the differences between 		
	 Know what iterative/final testing is. Understand suitable test data for a program. Understand how robust programs are made. 	 What an integrated development environment (IDE) 		

StudyJ27 GSE Computer ScienceJ27 GSE Computer ScienceKey Skills- M27 J27 J02 Computational thinking, algorithms and programming- HT3 J27 J12 Gomputer systems (ncre-public exam- HT4 J27 J7 J2 Computational thinking, algorithms and programming- HT4 J27 J7 J2 Computational thinking, algorithms and programming- HT4 J27 J7 J2 Computational thinking, algorithms and programming- HT5 J27 J12 Gomputer and programming- HT6 J27 J12 Gomputer and programming- HT6 J27 J12 Gomputer <th>Programme of</th> <th>HT1</th> <th>HT2</th> <th>HT3</th> <th>HT4</th> <th>HT5</th> <th>HT6</th>	Programme of	HT1	HT2	HT3	HT4	HT5	HT6
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 2.3 Producing Robust Programs (20 marks) HT2 1277/02 Computational thinking, algorithms and programming (mock exam) HT2 2277/02 Computational thinking, algorithms and programming (mock exam) HT4 2.5 IDE's (20 marks) HT4 2.5 IDE's (20	Key Assessments	• 2.2 Programming Fundamentals (20 marks)		HT3 2.1 Algorithms (20 marks)		HT5 J277/01 Computer systems (real exam)	
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officer		officer				officer	