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Computer Science KS4 Curriculum Map 2023-24

Yr10 (KS4)	Topic Area	Knowledge/Skills that are taught	Knowledge/Skills revisited	What does good look like?	Resources/support at home
Autumn 1	Unit 6 Programming	Data types and operations Sequence and selection Iteration Arrays and lists Subprograms Errors and testing Validation Files	Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming	• **Understand and use data types: integer, real, Boolean, char and string** • **Declare and use constants and variables** • **Use input, output and assignment statements** • **Use selection and nested selection statements** • **Use NOT, AND and OR and relational operators when creating Boolean expressions** • **Use random number generation**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/
Autumn 2	Unit 2 Data	Storage units and binary numbers Binary arithmetic and hexadecimal Binary shifts and two's complement	No prior knowledge is essential with this unit. However, students should have a basic	• **Define the terms bit, byte, kibibyte, mebibyte**	Google classroom PG Online

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		ASCII
		Images
		Sound
		Compression
			understanding of computer systems from lessons delivered as part of the Key Stage 3 national curriculum.
			
			KS3 Understanding computers
			KS3 Graphics
				• **Understand that data needs to be converted into a binary format to be processed by a computer**
				
				• **Convert positive denary whole numbers (0-255) into 8-bit binary numbers and vice versa**
				
				• **Explain the need for data compression**
				
				• **Understand how bitmap images are represented in binary including the terms:**
				  – **Pixels**
				  – **Resolution**
					https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2
					
					Replit
					https://replit.com/

Spring 1	Unit 3 Computers	Components of a computer system The CPU and the Fetch-Execute cycle Secondary storage Operating system Utility software Identifying vulnerabilities Programming languages	KS3 Understanding computers Building on KS2 knowledge Y7 Aut1 Y8 Aut 2 Y9 Spring 2 KS4 CS Systems architecture	• **Components of a computer system** • **The CPU and the Fetch-Execute cycle** • **Secondary storage** • **Operating system** • **Utility software** • **Identifying vulnerabilities**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/

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				• **Programming languages**	
Spring 2	Unit 1 Computational thinking	Decomposition and abstraction Developing algorithms using flowcharts Developing algorithms using pseudocode Algorithm output, errors and trace tables Searching algorithms Sorting algorithms Truth tables	Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming Unit 2: Problem solving and theory of computation	• **Understand flowchart symbols** • **Understand arithmetic operators and variables** • **Define the data types integer, floating point number, Boolean, character, string** • **Be able to use arithmetic and relational operators** • **Understand types of errors including:** • **Syntax** • **Logic** • **Runtime** • **Be able to apply logical operators in truth tables with up to**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/

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				three inputs to solve problems • Be able to follow and write algorithms using the following logical operators • AND • OR • NOT	

Summer 1	Unit 4: Networks	LANs and WANs
		The Internet
		Wired and wireless connections
		Protocols and layers
		Network topologies
		Network security
			KS3
			Networks
			Y9 Aut1
				• **Understand why computers are connected in a network**
				• **Describe the difference between a Local Area Network and a Wide Area Network**
				• **Explain the impact on performance of different network media:**
				  ○ **Speed**
				  ○ **Range**
				• **Understand the characteristics of network topologies, including:**
					Google classroom
					PG Online
					
					https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2
					
					Replit
					https://replit.com/

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				○ **Star**	
Summer 2	Unit 5: Issues and impact	Environmental issues Ethical issues Legislation and privacy Cyber security	KS3 Using computers safely, effectively and responsibly Computer crime and cyber security AI and machine learning KS4 Unit 3 Computers	• **Discuss the environmental issues associated with the use of digital devices including:** 　○ **Energy consumption** 　○ **Disposal** • **Understand the ethical issues of digital technology associated with the use of:** • **Robotics** • **Understand methods of intellectual property protection for computer systems and software including:** • **Copyright Designs and Patents Act 1988** • **Discuss the threat of digital systems posed by malware including:** • **Viruses, Trojans, key loggers** • **Understand how hackers exploit**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/

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				technical vulnerabilities to carry out cyberattacks including: • **Unpatched software, out-of-date anti-malware** • **Understand methods of protecting digital systems and data including:** • **Anti-malware, encryption, acceptable use policies, backup and recovery procedures**	

Yr11 (KS4)	**Topic Area**	**Knowledge/Skills that are taught**	**Knowledge/Skills revisited**	**What does good look like?**	**Resources/support at home**
Autumn 1	Programming Project Unit 6 Revision	Data types and operations Sequence and selection Iteration Arrays and lists Subprograms Errors and testing	Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming	• **Understand and use data types: integer, real, Boolean, char and string** • **Declare and use constants and variables**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 PG Online Clear Revise

		Validation Files		• **Use input, output and assignment statements** • **Use selection and nested selection statements** • **Use NOT, AND and OR and relational operators when creating Boolean expressions** • **Use random number generation**	Replit https://replit.com/ Seneca learning https://app.senecalearning.com Zigzag revision https://erevision.uk/
Autumn 2	Programming Project continued Unit 6 Revision	Data types and operations Sequence and selection Iteration Arrays and lists Subprograms Errors and testing Validation Files	Y7 Spring 2 Y7 Summer 2 Y8 Aut1 Y8 Spring 1 Y8 Spring 2 Y9 Aut2 Y9 Spring1 KS4 CS Programming KS5 CS Programming	• **Understand and use data types: integer, real, Boolean, char and string** • **Declare and use constants and variables** • **Use input, output and assignment statements** • **Use selection and nested selection statements**	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 PG Online Clear Revise Replit https://replit.com/ Seneca learning https://app.senecalearning.com

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				• **Use NOT, AND and OR and relational operators when creating Boolean expressions** • **Use random number generation**	Zigzag revision https://erevision.uk/
Spring 1	Unit 1,2,3 Revision	See above	See above	See above	See above
Spring 2	Unit 4,5 Revision	See above	See above	See above	See above
Summer 1	Revision/Exams	Revision/Exams	Revision/Exams	Revision/Exams	Revision/Exams
Summer 2	Revision/Exams	Revision/Exams	Revision/Exams	Revision/Exams	Revision/Exams

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