Computer Studies KS4 Curriculum Map 2021-22

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 ASCII Images Sound Compression	No prior knowledge is essential with this unit. However, students should have a basic understanding of computer systems from lessons delivered as part of the Key Stage 3 national curriculum.
			
			KS3 Understanding computers KS3 Graphics
				• Define the terms bit, byte, kibibyte, mebibyte
				
				• 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
					Google classroom PG Online
					
					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 • Programming languages	Google classroom PG Online https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2 Replit https://replit.com/

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 three inputs to solve problems
				
				• Be able to follow and write algorithms using the
					Google classroom
					PG Online
					
					https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2
					
					Replit
					https://replit.com/

				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:
				   ○ Star
					Google classroom
					PG Online
					
					https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2
					
					Replit
					https://replit.com/

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
					Google classroom
					PG Online
					
					https://www.pgonline.co.uk/resources/computer-science/gcse-edexcel/?tab=1cp2
					
					Replit

				including: ○ Viruses, Trojans, key loggers - Understand how hackers exploit 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	https://replit.com/

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 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 PG Online Clear Revise Replit https://replit.com/ Seneca learning https://app.senecal

					earning.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 - 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 PG Online Clear Revise Replit https://replit.com/ Seneca learning https://app.senecalearning.com Zigzag revision https://erevision.uk/
Spring 1	Unit 1,2,3	See above	See above	See above	See above

	Revision				
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