KS3 Computer Science: National Curriculum Map (Customised)

Information Technology	Digital Literacy	Computer Science*					
		Computational Thinking	Hardware/Software	Data Representation	Programming		
Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Understand how instructions are stored and executed within a computer system	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions		
Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability		Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits			

* Computer Science divided into sub-strands to allow mapping to GCSE Computer Science topics of study.



							EOY Assessment Point	
YEAR 9 (P-Band) CURRICULUM MAP: Computer Science							HT1 – HT6 KSU HT5-	
Computer Science 🔺 Information Technology 🔹 Digital Literacy					HT5: SQL Databases	Overarching unit intent (KSU):	EOY Assessment to cover all topics	
Computer Science - National Curriculum Strands				HT4: Machine Learning	Assessment Point: Summative or AFL	Overarching unit intent (KSU):	Investigation of key concepts in programming and development of a	Key Outcomes:
CT - Computational Thinking HS - Hardware/Software			HT3: Cryptography	Overarching unit intent (KSU):	HT3 & HT4 (with elements of HT1 & HT2) End of topic	Understand the role of databases, specifically	range programs (including a GUI) using a taxt based programming	Understand the role of databases in modern
DR - Data Representation PR - Programming	HT2: Computer Networks	Assessment Point: Summative or AFL	Overarching unit intent (KSU):	Investigation of how machine learning is used	Key Outcomes:	now they are used in conjunction with other web technologies.	language. (Links with revised OCR GCSE	applications. Create a database
HT1: Be Internet Citizens	Overarching unit intent (KSU):	HT1 Assessment of Data Representation & key content from Y7&Y8	Investigating the history of cryptography and modern encryption technologies. CT Recognising repeating patterns Breaking problems down into smaller chunks Removing unnecessary detail and simplifying a problem	in AI (Artificial Intelligence) systems. CT	ficial ficial fice) systems. ing repeating problems o smaller g unnecessary d simplifying a poth graphical based s to apply ML to practical s. on of legal and pplications of oology and its h everyday life. HT1 Investigate the history of encryption - use of shift and substitution ciphers. Understand how password hashing works Explore modern cryptographic uses. Understand the use of blockchain technologies including cryptocurrency HT2 Recap of development of artificial intelligence technology. Investigate how computers can analyse data using machine learning Develop simple programs that demonstrate machine learning/Al.	CT Recognising repeating patterns Breaking problems down into smaller chunks Removing unnecessary detail and simplifying a problem IT create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Computing Specification from 2020) PR Exploring key concepts of programming - Sequence,Selection,Itera tion. Use of variables and other data structures (e.g Lists) The purpose of functions and procedures. CT Break problems down into smaller sub- problems (Decomposition) Recognise repeating patterns. (Pattern Matching) Remove unnecessary detail and focus on the	Consisting of multiple tables. Understand how to connect to a database. Use SQL syntax to query a database. Create a simple web-based application that uses a database.
Overarching unit intent (KSU):	networks including common topologies and transfer protocols	HT2 Assessment: combination of practical assessment using rubric and online test to also include HT1 and some Y7&8 contentCT Recognisin patterns Breaking p down into down into chunks Removing detail and problemEHT1 Explore how online communication can be shaped by different agendasCT Recognisin patterns Breaking p down into down into dow		echnologies.Recognising repeating patternsRecognising repeating patternsRecognising repeating patternsBreaking problems lown into smaller hunks Removing unnecessary letail and simplifying a problemBreaking problems down into smaller chunks Removing unnecessary detail and simplifying a problemPR Use of both graphical and text-based languages to apply ML concepts to practical examples.PR Use of both graphical and text-based languages to apply ML concepts to practical examples.PR Use of both graphical and text-based languages to apply ML concepts to practical examples.PR Use of both graphical and text-based languages to apply ML concepts to practical examples.PR Use of legal and ethical implications of ML technology and its impact on everyday life.				
Investigate common causes of conflict online and how they can be avoided. (Google/Creators for Change Project)	estigate common uses of conflict online d how they can be bided. bogle/Creators for ange Project) HS Demonstrate an understanding of the Bus, Ring, Star and Mesh topologies including advantages							HT2 Students to work independently to plan, design, develop and evaluate a program to
DL understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how	and disadvantages of both. Identify the hardware required in a computer network and how it works. Investigate data transfer mediums including wired and wireless technologies.		DR Use of binary/hexadecimal to encode messages PR Writing suitable programs to assist with codebreaking					evaluate a program to meet a specific set of requirements. Students can develop their own project or choose from 3 given scenarios. (This links with GCSE Computer Science programming project)
to report concerns IT create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	DR MAC addressing - links with hexadecimal number base.	HT2 Understand how different network topologies work. Investigate hardware required in computer networks Understand IP and MAC addresses. Explore data transfer mediums Understand key networking protocols					specifics of a problem (Abstraction)	

YEAR 9 (Q-Band) CURRICULUM MAP: Computer Science

■ Computer Science ▲ Information Technology ● Digital Literacy

						HT5: Online Business	Overarching unit intent (KSU):	cover all topics
Computer Science -								HT1
National Curriculum Strands						RO81 - Pre-production	Explore the role the	
CT - Computational Thinking				HT4: Game Design in	Assessment Point	Overarching unit	documents (From	changing role that
HS - Hardware/Software	8			Python	Summative or AFL	intent (KSU):	Creative iMedia	technology plays in
DR - Data Representation							specification). Be able	business
PR - Programming						Understanding how new		Investigate how
5 5			HT3: Graphic Design for	Overarching unit intent	HT3 & HT4 (with	businesses are created	documentation for	businesses engage with
			Social Media	(KSU):	elements of HT1 & HT2)	and the role that	design projects	customers online.
						technology plays in	uesign projects.	
	HT2: Computer	Assessment Point:	Overarching unit intent	Investigation of key	Key Outcomes:	business.	IT	customers online
	Networks	Summative or AFL	(KSU):	concepts in programming			create, reuse, revise	Lindertake a practical
				and development of a	HI1 Deservels suisting digital	п	and repurpose digital	enterprise project
			Use graphics software to	a CLW using a toxt based	Research existing digital	create, reuse, revise	artefacts for a given	enterprise project.
HT1: Be Internet	Overarching unit	HT1 Assessment of Data	create compelling promotional	a GOI) using a text-based	graphics.	and repurpose digital	audience, with	
Cltizens	intent (KSU):	Representation & key content	graphics for use in online	programming language.	for a specified	artefacts for a given	attention to	HT2
		from Y/&Y8	applications.	DD	Jor a specified	audience, with	trustworthiness,	Investigate types of pre-
	Investigate computer	HT2 Assessment: combination of		FN Exploring key concepts of	Explore different	attention to	design and usability	production documents.
Overarching unit intent	networks including	practical assessment using rubric	IT	programming -	araphical file types	trustwortniness,		Develop pre-productions
(KSU):	common topologies and	and online test to also include	create, reuse, revise and	Sequence Selection Iterat	Understand the	design and usability	Undertake creative	documents for a desian
Investigate common	transfer protocols	HT1 and some Y7&8 content	repurpose digital artefacts	ion	difference hetween		projects that involve	concept.
causes of conflict online			for a given audience, with	Use of variables and	vector and bitman	Links with elements	selecting, using, and	Be able to plan an IT
and how they can be	ЦС	Key Outcomes:	attention to trustworthiness,	other data structures (e.g	araphics	of GCSE Business	combining multiple	project using a GANTT
avoided. (Google/Creators	ns Domonstrato an		design and usability	Lists)	9 . <i>0µ</i> 2	Changing use of ICT - in	applications,	chart.
for Change Project)	understanding of the	HT1		The purpose of functions		husiness and economic	preferably across a	Understand copyright
	Bus Ring Star and	Explore how online	Undertake creative projects	and procedures.	HT2	activities.	range of devices, to	legislation and the
DL	Mesh topologies	communication can be shaped	that involve selecting, using,		Develop a graphical	activities,	achieve challenging	licensing of intellectual
understand a range of	including advantages	Understand the terms Fake	and combining multiple	СТ	game using Python and		goals, including	property (images, sound,
safely respectfully	and disadvantages of	News, Echo Chamber and Filter	applications, preferably	Break problems down	Pygame		collecting and	video)
responsibly and securely	both.	Bubble.	across a range of devices, to	into smaller sub-	Demonstrate an		analysing data and	
including protecting their	Identify the hardware	Discuss the rise of hate speech	including collecting and	problems	understanding of using		known users	
online identity and privacy;	required in a computer	online.	analysing data and meeting	(Decomposition)	Selection to control		KIIUWII USEIS	
recognise inappropriate	network and how it	Understand how to use social	the needs of known users	Recognise repeating	program sequence			
content, contact and	works.	media responsibly		patterns. (Pattern	Demonstrate the use of			
conduct, and know how to	Investigate data		DR	Matching)	variables, constants and			
report concerns	transfer mediums	НТ2	understand how data of	Remove unnecessary	other data structures (e.g			
IT	including wired and	Understand how different	various types (including text,	detail and focus on the	lists, dictionaries)			
create reuse revise and	wireless technologies.	network topologies work.	sounds and pictures) can be	(Abstraction)	(functions (proceedures) to			
repurpose digital artefacts		Investigate hardware required in	represented and	(ADStraction)	(junctions/procedures) to			
for a given audience, with		computer networks	manipulated digitally, in the		officient			
attention to	DR	Understand IP and MAC	form of binary digits		HPA Only: Explore OOD			
trustworthiness, design	MAC addressing - links	addresses.			approaches to			
and usability	with hexadecimal	Explore data transfer mediums			development			
	number base.	Understand key networking			development			

EOY Assessment Point

HT1 – HT6 KSU HT5-

HT6: Planning IT Projects

EOY Assessment to