

Curriculum Content Map										Subject: Y10 Computer Science															
Month		Term 1				Term 2				Term 3															
		September	October	November	December	January	February	March	April	May	June	July													
Cultural Transmission	Units of Work	1.2B specification area – binary and denary conversions, sound, text, image data representation.				2.2A Programming fundamentals – sequencing, selection and iteration.		2.4 Logic gates and low level languages.		2.2A Hardware		2.2B string manipulation, file handling procedures, functions, random numbers.		1.4 network threats		1.5 software		1.6 laws and ethics of computing							
	KS4 National Curriculum	Ks4.1 – computer science knowledge				Ks4.2 – computational thinking skills.		Ks4.2 problem solving skills		Ks4.1 computer science knowledge		Ks4.2 computational thinking skills.		Ks4.3 safe use of the internet.		Ks4.1 computer science knowledge		4.3 safe use of the internet.							
	Substantive Knowledge	The What!		L1 - Binary Units L2 - Binary to denary Conversion L3 - Denary to binary Conversion L4 - Binary addition L5 - Binary to hexadecimal L6 - Hexadecimal to binary		L1 - Character Sets (ASCII and UNICODE). L2 - Image Representation (practical) L3 - Image Representation (theoretical) L4 - Sound Representation L5 - Revision L6 - EOU 1.2B Assessment		L1 - Print statements and syntax errors L2 - IF Statements L3 - My Quiz L4 - FOR Loops L1 L5 - FOR Loops L2 - use of count variable. L6 - WHILE Loops L7 - AP1 Assessment		L1 - Driverless cars (no pens day) L2 - Logic Gates (AND/OR) L3 - Multiple Gates (NOT)		L1 Memory - RAM and ROM. L2 Memory - Virtual Memory L3 Storage Types L4 Storage Properties L5 CPU L6 Von Neumann Architecture L7 Assessment		L1 End of 1.1-1.2A Assessment L2 Lists L3 Random numbers L4-5 Project: Snakes and ladders		L1 String Manipulation L2 Writing to files L3 Writing to csv. L4 SQL L5 Procedures L6 Functions L7-9 Mini Project		L1-4 Mini Project (consolidation of units 2.1 and 2.2)		L1 Viruses L2 Secure passwords L3 External Threats L4 Internal threats L5 Social Engineering L6 Assessment L8 Environmental concerns.		L1 Operating systems L2 Encryption software L3 Utility programs L4 Application software L5-6 EOU Assessment L7 Laws L8 Environmental concerns.		L1 Cultural impact L2 Privacy issues L3 Big Debate - privacy L4 Assessment	
	Disciplinary Knowledge	The How!		L1 - Converting between binary units. L2 - Converting between binary and denary. L3 - Converting denary to binary. L4 - Adding binary numbers. L5 - Converting binary to hexadecimal. L6 - Converting hexadecimal to binary.		L1 - Comparing ASCII and UNICODE - being able to choose which is most appropriate for a scenario. L2 - Be able to record an image in binary. L3 - Be able to explain how images are stored using binary (pixels, colour codes, binary). L4 - Be able to explain how sound is sampled into digital format (height of wave measured at regular intervals and stored in binary).		L1 - Create print statements. Be able to identify and correct syntax errors. L2 - Be able to use IF statements within a program. L3 - Create a scored multiple choice quiz. L4 - Create repeating programs using FOR loops. L5 - Create FOR loops, using the count variable with mathematical operators. L6 - Create repeating programs using WHILE loops.		L1 - Be able to identify ethical reasons for and against the use of driverless cars. L2 - Be able to draw logic gates and truth tables for single gate scenarios. L3 - Be able to use the NOT gate as an input to, or output from, another logic gate.		L1 Memory - Comparing RAM and ROM. L2 Tracing memory allocation and the use of Virtual Memory. Evaluating the impact of increasing RAM on system performance. L3 Comparing similarities and differences between storage types. L4 Evaluating the choice of storage. L5 Calculating total overall clock speed. L6 Explaining the operations within the fetch-execute cycle. L7 Assessment		L2 - Be able to implement list operators (append, delete, IN). L3 - Be able to generate random numbers and use these with an IF statement to create an output. L4-5 Students use lists and random numbers to create a simplified game of snakes and ladders.		L1 Students will be able to string slice and concatenate to create new strings. L2 - Students will be able to write to and read from text files. L3 - Students will be able to write to and read from CSV files L4 - Students will be able to read data through SQL statements. L5 - Students will be able to create a procedure. L6 Students will be able to create a function. L7-9 students will be able to create a program to input and manipulate an input, storing the outcome into a CSV file.		L1-4 students will be able to create a program to input and manipulate an input, storing the outcome into a CSV file.		L1 - Students will be able to explain the differences between different external threats. L2 - Students are able to create and test a secure password. L3 - Students can explain different external threats, including being able to identify preventative methods. L4 - Students can explain different internal threats, including being able to identify preventative methods. L5 - Students can explain the meaning of social engineering, and how to prevent becoming a victim.		L1 - Students can explain the roles carried out by an operating system. L2 - Students will be able to explain the term encryption and why it is an important security tool. L3 - Students will be able to explain the role of different utility programs. L4 - Students will be able to explain the role of different application software packages. L7 - Students will be able to identify which laws have been broken for different scenarios. L8 - Students will be able to explain the environmental impact of computers.		L1 - Students will be able to explain the cultural impact of technology - including loss of jobs, access to information, digital divide. L2 - Students will be able to identify privacy issues relating to technology. L3 - Students will be able to identify arguments for and against E2E Encryption.	
	Sequencing (Flow)	Retrieval & Extension	Builds on Students completed a lesson on binary in Year 9 Further Developed in A-Level Computer Science focuses on negative and fractional binary numbers.				Builds on Students have some experience programming in Scratch. Further Developed in Unit 2.2 develops programming skills further.		Builds on Students understand the words NOT, AND and OR, but not the logic gates. Further Developed in A-Level Computer Science includes boolean logic.		Builds on Students have experience using hardware and possibly choosing the specification of a device. Further Developed in Network hardware is focused on in unit 1.3		Builds on Unit 2.1, where students develop a series of short programs. Further Developed in GCSE Y11 Programming Project.				Builds on Students have prior knowledge of some e-safety around scams and viruses. Further Developed in Computer Misuse Act (1.6) focuses on the illegality of hacking.		Builds on Students have experience using the software, but not of choosing appropriate software. Further Developed in A-Level Computer Science includes system software.		Builds on Students will have some understanding of digital privacy from E-Safety lessons. Further Developed in A-Level Computer Science includes legal and ethical issues.				
	Summative Assessment		End of Unit assessment based on unit 1.2B				Full GCSE Paper 1 exam.				End of Unit assessment focused on logic gates & Hardware.		End of unit 1.1-1.2A Assessment.		Full Paper 1 exam.		Project assessment.		End of unit 1.4 assessment.		End of unit 1.5 assessment.		End of Unit 1.6 assessment		
Personal Empowerment	Virtue	Friendliness & Civility		Justice & Truthfulness		Courage		Generosity		Gratitude		Good Speech		Good Temper & Humour		Self-Mastery		Compassion		Good Sense					
	Link to Virtue	The opportunity to reflect, think deeply and critically about an issue. Students will be demonstrating friendliness and civility by supporting one another with a difficult new skill.		Students will explore the truth about how binary is used to store images, sound and text. Students will demonstrate leadership in managing computer data.		Students will demonstrate courage as they have their first experience programming. Students will demonstrate problem solving by coding programs and identifying errors.		Students will explore generosity through the difference between the word OR in general language and the more generous OR gate. Students will demonstrate creativity in designing algorithms using low level languages.		Students will demonstrate gratitude for computers through an appreciation of hardware. Students will stay positive as they choose hardware for scenarios.		Students will demonstrate good speech as they critique the programmes created by other students. Students will demonstrate good speech as they critique the programmes created by other students.		Students will demonstrate good temper as they explore how to avoid cyber threats. Students will explore remaining positive after a cyber attack.		Students will demonstrate self-mastery as they explore how to prevent online attack. Students will aim high by seeking to avoid cyber attack.		Students will demonstrate self-mastery by completing a programming project. Students will aim high by aiming to fully resolve the set problem.		Students will demonstrate compassion as differences between free and paid for software are explored. Students will be able to share with others the decisions they make.		Students will demonstrate good sense by understanding and following the laws of computing. Students will work as part of a team in a big debate about the ethics of driverless cars.			
Preparation for Work	Skill	Listening		Leadership		Problem-Solving		Creativity		Staying Positive		Speaking		Staying Positive		Aiming High		Speaking		Teamwork					
	Link to Skill	Students will be exploring communication by computers.		Students will demonstrate leadership in managing computer data.		Students will demonstrate problem solving by coding programs and identifying errors.		Students will demonstrate creativity in designing algorithms using low level languages.		Students will stay positive as they choose hardware for scenarios.		Students will demonstrate good speech as they critique the programmes created by other students.		Students will explore remaining positive after a cyber attack.		Students will aim high by seeking to avoid cyber attack.		Students will aim high by aiming to fully resolve the set problem.		Students will be able to share with others the decisions they make.					
Preparation for Citizenship	SMSC & British Values	SMSC - Cultural		SMSC - Social		BV - Individual Liberty		BV - Mutual Respect.		BV - Individual Liberty		BV - Rule of law		SMSC - Cultural		BV - Rule of Law									
	Link to SMSC & British Values	Students will gain an understanding of how computers store information and the impact of this on culture.		Students will explore how a range of languages are stored on a computer.		Students will gain programming skills, which will provide a wider range of future employability options.		Students will explore how computer performance is improved, for an improved user experience.		Students will gain programming skills, which will provide a wider range of future employability options.				Students will explore the illegality of computer viruses and their impact on others.		Students will explore the choice of software and how this impacts society.		Students will explore laws which impact the use of computing.							

British Values
Democracy
Rule of Law
Individual Liberty
Mutual Respect
Tolerance

SMSC
Spiritual
Moral
Social
Cultural