YEAR 9 LONG TERM PLAN with CURRICULUM STANDARDS

COMPUTER SCIENCE THEORY

YEAR 9	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR9/1 (2)	YR9/2 (2)	YR9/3 (2)	YR9/4 (2)	YR9/5 (2)	YR9/6 (2)	YR9/7 (4)	
				ALGORITHMS				
	Introduction to algorithms	Interpreting and creating algorithms	Making use of programming constructs	Appropriate conventions	Purpose and output of an algorithm	Identify and correct errors in algorithms using trace tables	Bubble sort	
Term 1	YR9/8 (4)		YR9/9(2)	YR9/10(2)	YR9/11(2)	YR9/12(4)		YR9/13(2)
			ALGORITHMS			*MACHINES AND COMPUTATIONAL MODELLING*		*NETWORKS*
	Merge sort		Linear search	Binary search	Fitness for purpose of algorithms	The input-process-output model and the range of computational models		Network, different types of networks and usage models and Wired and wireless connectivity

YEAR 9	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 2	YR9/14(2)	YR9/15(2)	YR9/16(2)	YR9/17(2)	YR9/18(2)	YR9/19(2)	YR9/20(4)	
		NETWORKS				*BINARY*		
	Network data speeds, the role of and need for network protocols	Data transmission and the 4-layer TCP/IP model	network topologies and Different mobile communication standards	Data representation (numbers, text, sound, graphics) and program instructions in binary	Computers represent and manipulate numbers (unsigned integers, signed integers (sign and magnitude, two's complement))	Convert between binary and denary whole numbers (0–255)	Binary arithmetic and the concept of overflow	
Term 2	YR9/21(4)		YR9/22(4)		YR9/23(2)	YR9/24(2)	YR9/25(4)	YR9/26(4)
	BINARY		*DATA REPRESENTATION*					*HARDWARE*
	Hexadecimal notation and to convert between hexadecimal and binary		Computers encode characters using ASCII and Unicode		Bitmap images are represented in binary (pixels, resolution, colour depth)	How sound, an analogue signal, is represented in binary	The limitations of binary representation of data	The function of the hardware components of a computer system and how they work together and the function of different types of memory

COMPUTER SCIENCE PRACTICAL

YEAR 9	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR9/P1 (2)	YR9/P2(2)	YR9/P3(2)	YR9/P4(2)	YR9/P5(2)	YR9/P6(2)	YR9/P7 (4)	
			ALGORITHMS				*DEVELOP CODE*	
	Introduction to algorithms	Interpreting and creating algorithms	Making use of programming constructs and appropriate conventions	To code an algorithm in a high-level language	The choice of algorithm and data values that need to be manipulated	write programs in a high-level programming language	To improve readability and to explain how the code works	
Term 1	YR9/P8 (4)		YR9/P9 (4)		YR9/P10 (4)		YR9/P11 (4)	
	DEVELOP CODE		*DATA TYPES AND STRUCTURES*					
	Interpret error messages and identify, locate and fix errors in a program		Data types (integer, real, Boolean, char, string)		Strings		Variables and constants	

YEAR 9	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR9/P12 (4)		YR9/P13 (4)		YR9/P14 (4)		YR9/P15 (4)	

Term 2	DEVELOP CODE			CONSTRUCTS		
	Determine the strengths and weaknesses of a program and suggest improvements			Structural components of a program - variable and type declarations		Structural components of a program - command sequences, selection, iteration
	YR9/P16 (4)		YR9/P17 (4)	YR9/P18 (4)		YR9/P19 (4)
	CONSTRUCTS					
	Structural components of a program - command sequences, selection, iteration		Structural components of a program - data structures, subprograms		Structural components of a program - data structures, subprograms		Sequencing, selection and iteration constructs

YEAR 10 LONG TERM PLAN with CURRICULUM STANDARDS

COMPUTER SCIENCE THEORY

YEAR 10	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR10/1(2)	YR10/2(2)	YR10/3(2)	YR10/4(2)	YR10/5(2)	YR10/6(4)		YR10 /7(2)
	HARDWARE				*DATA STORAGE AND COMPRESSION*			
	The concept of a stored program and the role of components of the CPU in the fetch-decode execute cycle (the Von Neumann model)	The factors that affect the performance of the CPU	Data storage/'cloud' and other contemporary secondary storage	The need for embedded systems and their functions	To use and convert between binary and denary multiples	The need for data compression and methods of compressing data		Lossless, run-length encoding (RLE) algorithm File storage - measured in bytes and be able to calculate file sizes
Term 1	YR10/8(2)	YR10/9(4)		YR10/10(2)	YR 12/11(2)	YR 10/12(2)	YR 10/13(2)	YR 10/14(2)
	ENCRYPTION				*LOGIC*			*SOFTWARE*
	The need for data encryption	Encryption algorithms		Encryption algorithms	To construct and interpret truth tables for a given logic statement (AND, OR, NOT)		To produce logic statements for a given problem	Ooperating system and how it manages files, processes, hardware and the user interface

YEAR 10	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 2	YR10/15(2)	YR10/16(2)	YR10/17(2)	YR10/18(2)	YR10/19(2)	YR10/20(2)	YR10/21(2)	YR10/22(2)
	SOFTWARE		*PROGRAMMING LANGUAGES*		*DECOMPOSITION AND ABSTRACTION*			
	The purpose and functions of utility software	Software to simulate and model aspects of the real world, system software and application software	High-level and low-level programming languages and suitability for a particular task	Assembler, compiler and an interpreter and the advantages and disadvantages of each	Analyse a problem, investigate requirements (inputs, outputs, processing, initialisation) and design solutions	Decompose a problem into smaller sub-problems	Uses of abstraction	Real-world examples
Term 2	YR10/23(2)	YR10/24(2)	YR10/25(2)	YR10/26(2)	YR10/27(2)	YR10/28(2)	YR10/29(2)	YR10/30(2)
	NETWORK SECURITY				*THE INTERNET AND THE WORLD WIDE WEB*			
	Importance of network security and appropriate validation and authentication techniques	Different forms of cyber attack			Identifying vulnerabilities,review of network,user policies and protect software systems from cyber attacks	Internet, WWW and components of the WWW	IP addressing,IPv4, IPv6	The role of components used to access the internet

COMPUTER SCIENCE PRACTICAL

YEAR 10	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR10/P1 (4)		YR10/P2 (4)		YR10/P3 (4)		YR10/P4 (4)	
	DATA TYPES AND STRUCTURES							
	Data structures (records, one-dimensional arrays)		Data structures (two-dimensional arrays)		Global and local variables when implementing subprograms		Global and local variables when implementing subprograms	
Term 1	YR10/P5 (4)		YR10/P6 (4)		YR10/P7 (4)		YR10/P8 (4)	
	DEVELOP CODE							
	Types of error in programs (logic, syntax, runtime)		To design and use test plans	Test data (normal, boundary, erroneous)and identify, locate and fix errors		Trace table		Determine the strengths and weaknesses of a program and suggest improvements.

YEAR 10	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 2	YR10/P9 (4)		YR10/P10 (4)		YR10/P11 (4)		YR10/P12 (4)	
	INPUT/OUTPUT						*OPERATORS*	
	Write code that accepts and responds user input		Validation		Write code that reads/writes from/to a text file		Arithmetic operators (add, subtract, divide, multiply, modulus, integer division)	
	YR10/P13 (2)	YR10/P14 (6)			YR10/P15 (4)		YR10/P16 (4)	
	OPERATORS							
	Arithmetic operators (add, subtract, divide, multiply, modulus, integer division)	Relational operators (equal to, less than, greater than, not equal to, less than or equal to, greater than or equal to)			Logic operators (AND, OR, NOT)		Logic operators (AND, OR, NOT)	

YEAR 11   LONG TERM PLAN with CURRICULUM STANDARDS

COMPUTER SCIENCE THEORY

YEAR 11	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 1	YR11/1(4)		YR11/2(4)		YR11/3(4)		YR11/4(4)	
	EMERGING TRENDS, ISSUESAND IMPACT							
	The environmental impact of technology (health, energy use, resources) on society		The ethical impact of using technology (privacy, inclusion, professionalism) on society		The legal impact of using technology (intellectual property, patents, licensing and cyber-security)		Current and emerging trends in computing technology (quantum computing, DNA computing, artificial intelligence (AI), nanotechnology)	
Term 1	YR11/5(4)		YR11/6(4)		YR11/7(4)		YR11/8(4)	
	REVISION							
	Revision on Topic 1: Problem solving		Revision on Topic 3: Data		Revision on Topic 4: Computers		Revision on Topic 5: Communication and the internet	

YEAR 11	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 2	YR11/9(4)		YR11/10(4)		YR11/11(4)		YR11/12(4)	
	REVISION							
	REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER	

COMPUTER SCIENCE PRACTICAL

YEAR 11	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
	YR11/P1(2)	YR11/P2 (6)			YR11/P3(4)		YR11/P4 (4)	
	SUBPROGRAMS							
	Benefits of using subprograms	Write code that uses user-written and pre-existing (built-in, library) subprograms			Passing data into and out of subprograms (procedures, functions)		Create subprograms that use parameters	
	YR11/P5(2)	YR11/P6(4)		YR11/P7(2)	YR11/P8(4)		YR11/P9(4)	
	REVISION							
	Revision on Topic 2: Programming (2.1 Develop code)	Revision on Topic 2: Programming (2.2 Constructs)			Revision on Topic 2: Programming (2.3 Data types and structures and 2.4 Input/output)		Revision on Topic 2: Programming (2.5 Operators and 2.6 Subprograms)	

YEAR 11	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
Term 2	YR10/P10(4)		YR11/P11(4)		YR11/P12(4)		YR11/P13(4)	
	REVISION							
	REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER		REVISION - PAST PAPERS/SAMPLE PAPER	