Yearly Overview Plan

Term 1	**Subject: Computer Science**			
Unit Topic	Learning Outcomes		Real World / UAE Application	Assessment Methods
Online safety in the UAE	- L1 to learn the basics of staying safe online in the UAE. - L2 application of the LAW within UAE. - L3 evaluation of the cyber law within the UAE		- Students learn how to be active digital citizens online - Students research and learn the different laws affecting them in the UAE	- This topic will be assessed by question and answering - We will use "silent debate" to assess the students and gain a firm understanding of the aspects that they have covered
Game programming in Scratch	Wk1	• Understand that Scratch is a programming environment that allows you to create games, animations and other simulations • Understand what is meant by an algorithm • Create a sprite and write code to make it move and bounce • Load and use an existing Scratch file • Produce design ideas for a Scratch project	- Game can be linked to looking after animals in the UAE what differences do, we have in the UAE that we have in other counties.	- Project creation within Scratch to be self / peer and teacher assessed - Independent workbook to be assessed by the teacher - End of topic exam to be assessed by the teacher
	Wk2	• Define a variable • Write algorithms which use variables to hold values such as **Number of Lives Left** or **Score** in a computer game • Understand the purpose of comments in a program • Annotate a program with comments		
	Wk3	• Understand the purpose of repeat loops and procedures ("broadcasts") • Use a broadcast in your own Scratch program		

	Wk4	• Learn what each of the operators in the Scratch Green block menu does • Use the **Pick Random** block to position objects randomly on the screen • Understand the use of the operators **<, =, >, and, or, not**. • Use some of these in a Scratch game		
	Wk5	• Learn programming techniques to add shooting at a target into a game • Learn how to adjust x and y coordinates to control the position of a sprite • Learn how to make a sprite jump		
	Wk6	• Understand the purpose of testing • Understand what makes a specific and measurable test • Carry out testing on the Scratch project • Make corrections where necessary and test again		

Term 2	**Subject: Computer Science**			
Unit Topic	Learning Outcomes		Real World / UAE Application	Assessment Methods
Understanding Computers	Wk1	• Distinguish between hardware and software • Identify input, output and storage devices • Name at least five pieces of software • Understand what happens at the “Process” stage • Suggest appropriate input and output devices for a given scenario	- With Expo2020 coming up how will be able to understand computers help people in the UAE could this give them the edge over other developing country’s?	- Independent workbook to be assessed by the teacher - End of topic exam to be assessed by the teacher

	Wk2	• Draw a block diagram of the main components of a computer: input, processor, output and storage • Explain what main memory is used for • Distinguish between main memory and permanent storage devices • Name the three stages in the Fetch Execute Cycle • Define Hz, MHz and GHz and state how these relate to the speed of the processor • Understand the difference between RAM and ROM and what ROM is used for		
	Wk3	• State why all data is represented in binary in a computer • Understand that a particular bit pattern may represent, for example, an instruction to do something, a letter, a number or a tiny piece of a graphical image • Define a Bit, Byte, Kb, Mb and Gb • Convert integers to binary numbers • Convert binary numbers to integers • Look up from a table the bit pattern for a given character • State how many different characters can be represented using 8 bits • Give examples of alphanumeric characters and special symbols that can be represented in ASCII • Show that a bit pattern can represent either a character or a decimal number		
	Wk4	• Add two binary numbers (each less than 7 binary digits)		

		• Multiply a binary number by 2 • Identify a binary number as being odd or even		
	Wk5	• State the typical capacities, strengths and weaknesses of different storage devices • Describe how data is stored on a CD • Describe how 0s and 1s are represented by pits and lands on a CD • Name three types of optical storage device		
	Wk6	• Review the history and development of communication. • Understand how modern communication and computing devices combine multiple technologies • Discuss the different ways and applications in which modern technology is used • Discuss future uses of technology and the pace of change (Moore's Law)		
Microbits programming – introduction to Python	Wk1	• Learn what Python is and some of the applications it is used for • Run a simple Python program in Interactive mode using the **input** and **print** functions • Write, save and run a program in Script mode • Understand what a syntax error is and how to interpret an error message • Know the rules for variable names and use variables in a program • Understand the use and value of comments in a program	With Expo2020 coming up how will be able to understand computers help people in the UAE could this give them the edge over other developing country's?	Pupils will write and run a program and submit the code and screenshots of the program running in a learning Portfolio.

	Wk2	• Understand the importance of using correct data types *string*, *integer*, *float* • Understand how to use assignment statements correctly • Perform arithmetic using the BIDMAS rule • Use the *int*, *float* and *round* functions • Write a program involving input, calculation and output		
	Wk3	• Use selection statements *if*, *else* and *elif* in a program • Use indentation correctly to define a block of code		
	Wk4	• Learn to write algorithms in pseudocode • Review the difference between syntax errors, run-time errors and logic errors • Learn techniques for debugging programs		
	Wk5	• Use a *while* loop in a program • Use an *if* statement within a while loop • Use a function to generate a random number • Understand and apply the principle of a binary search • Compare the efficiency of a binary search with a linear search		
	Wk6	• Compare alternative algorithms for a given problem • Use a linear search to find a number • Understand how a binary search works		
	Wk7	• Test a program • Complete the assessment		

Term 3	**Subject: Computer Science**			
Unit Topic	Learning Outcomes		Real World / UAE Application	Assessment Methods
Python Advanced	Wk1	• Correctly read and understand an existing Python program • Recall different data types • Use the **int()**, **float()** and **str()** functions to convert data types • Write an if-else statement	With Expo2020 coming up how will be able to understand computers help people in the UAE could this give them the edge over other developing country's?	Pupils will answer some questions relating to a short Python program and write some pseudocode for a short program. They will write and run a program and submit the code and screenshots of the program running in a learning Portfolio.
	Wk2	• Use a **while** loop to repeat a section of code • Use a **for** loop to repeat a section of code • Make a choice about which loop to use, and why		
	Wk3	• Be able to store and update values in a list • Be able to append data to a list • Be able to use a **for()** loop to step through a list • Understand why using a list can be more efficient than using single variables		
	Wk4	• Understand what a procedure is • Be able to define and call a procedure • Understand why procedures are useful • Be able to use parameters in a procedure		
	Wk5	• Understand what a function is • Be able to define a function • Be able to call a function and capture the return value		
	Wk6	• Read through a program • Complete the assessment		

	Wk7	• Complete the assessment		
	Wk8	• Complete the assessment		