ICT & Computing KS3 Curriculum 2022 – 2023

	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
YEAR 7											

Network & Email
- Know that there are hardware and software components that make up computer systems
- know that they communicate with one another and with other systems.
- Know that computer networks can provide multiple services, such as the Internet.

Hardware & Software
- Know what hardware is including input, output and storage devices.
- Know what software is including operating systems, applications software and utilities software. Be able to identify the main components and their functions.
- Know that computers contain a CPU that processes data by fetching decoding executing instructions.

Databases
- Know what a database is and why they are used.
- Recognise that digital content can be represented in many forms.
- Recognise different types of database terminology (table, record, field, datatype).
- Recognise that data can be structured in tables to make it useful.
- Know that filters are used to search for information.

Online Safety
- Know about online dangers and risks
- Know that there are a range of ways to use technology safely, respectfully, responsibly and securely, including; protecting their online identity and privacy;
- Know what inappropriate content is and know how to report concerns.
- Know about social media and social networking
- Know the online safety key terms

Animation
- Know what an animation is and the keyword terminology (frame, stage, sprite)
- Know about different image file types.
- Be able to import images and manipulate characters on the stage to create a basic animation that follows a basic storyline.
- Animate a stick figure to interact naturally with the background.
- Evaluate and improve an animation

Online Safety
- Know the following: self image & Identity ; Online Reputation; Online Bullying; Managing Online Information; Health Wellbeing & Lifestyle; Copyright & Ownership; Privacy & Security.
- (Age appropriate sequential learning - repeating knowledge in more depth and age appropriate examples given)
- Students learn the 8 strands throughout KS3 (Educated for a connected world)

Introduction to Computing
- Understand the concept of binary as a base 2 number system and know why computers use binary
- Be able to convert simple binary numbers up to 6 bit into denary and back.
- Understand the concept of reliability and trustworthiness and be able to identify trustworthy sources of information
- Be able to carry out parameter searches

Spreadsheets
- Enter text and numbers onto a spreadsheet and apply formatting.
- Sort and filter a spreadsheet.
- Use formulas to perform basic calculations
- Know about the different charts and graphs
- Change the data and recognise that poor quality data leads to unreliable results

Programming
- Use two or more programming languages (Scratch or Small basic), block based and textual.
- Understand that computers need precise instructions
- Create interactive programs in Python that use both input and print statements
- Know what a variable is
- Use correctly named variables in programs

			- Understand that different data types exist and be able to change between string and integer - Use common arithmetic operators - Identify and correct syntax errors - Incorporate selection to control flow of programs using If statements
YEAR 8			
	Online Safety - Identify online dangers and risks - Understand the importance of communicating safety and respectfully online including the importance of "big data", data consent and privacy laws. - Demonstrate safe and responsible use of computer networks. - Creates digital content to achieve a given goal, through a combination of different software's. - (Age appropriate sequential learning - repeating knowledge in more depth and age appropriate examples given)	**Spreadsheets** - Enter text and numbers onto a spreadsheet and apply conditional formatting. - Sort and filter a spreadsheet and use comparator operators in a formula. - Use advanced functions such as AVERAGE, MIN, MAX and VLOOKUP. - Understand the difference between relative and absolute cell references. - Create a spreadsheet using formulas and functions to solve a real world problem (abstraction) - Create and format charts and graphs - Change the data / variables to test out different scenarios. - Make predictions about how changes in data will affect the outcomes on the spreadsheet.	**Computational Thinking** - Understand the meaning of the key terms abstraction, decomposition and algorithmic thinking - Know the flowchart symbols commonly used to design algorithms - Know how pseudocode is used to create algorithms - Be able to use abstraction and decomposition to solve real world problems and understand it can be done in more than one way - Be able to create, evaluate and refine an algorithm as both pseudocode and as a flowchart - Be able to incorporate selection into algorithms to control the flow of a solution - Understand how If, elif and else statements are structured - Identify repeated patterns and understand the meaning of iteration - Know the difference between count and condition controlled loops - Know how different sorting algorithms work
	Technology - Identify different hardware devices including input, output and storage devices. - Understand that software is made of instructions written in code - Understand the relationship between application software, system software and hardware - Understand the need for secondary storage	**Python Programming** - Combine text, values and variable in single lines of output - understand the use of and be able to select appropriate data types - Use nested if statements to control program flow - Use iteration in programs, including count and condition controlled loops - Design, test and refine coded solutions to simple problems	**Online Safety** - Understand the following: self image & Identity ; Online Reputation; Online Bullying; Managing Online Information; Health Wellbeing & Lifestyle; Copyright & Ownership; Privacy & Security. - (Age appropriate sequential learning - repeating knowledge in more depth and age appropriate examples given) - Students learn the 8 strands throughout KS3 (Educated for a connected world)

	- be able to classify programs as systems, applications software or utilities software. - Know the main phases in the development of computers from the abacus to the present day and the development of the internet and cloud computing.	Use linear and binary searching algorithms and be able to identify the most appropriate to solve a given problem	
	Data Representation - Be able to carry out binary addition with numbers up to 8 bit - Understand how binary numbers are used to represent unique codes - Understand how images are made from pixels and how they are store on a computer - Know what a character set is and how binary codes are used to represent characters - Understand how binary codes are used to represent sound - Understand the relationship between sample rate, bit depth, sound quality and file size	Databases - Understand and explain what a database is and why they are used. - Explain different types of database terminology (table, record, field, datatype). - Define data types. - Explain how data can be structured in tables to make it useful. - Use filters to perform single criteria searches for information. - Query data on one table using query language. - Perform more complex searches for information (Boolean & relational operators)	Flowol
YEAR 9			
	Online Safety - Understand a range of online dangers, scams and risks and how to avoid them and provide tailored advice to others. - Demonstrate knowlegde of social networking including features, issues, safety and security. - Recognise how data is used online and the importance of consent. - Discuss the areas of the digital divide and how they affect people. (Age appropriate sequential learning - repeating knowledge in more depth and age appropriate examples given)	Photoshop - Know and identify purposes of why images are used. - Explain how pixels are used to create an image. - Understand and explain the difference between vector and bitmap images with examples of file types for each. Identify fake and real images. - List, explain and identify a variety of techniques used to manipulate images. - Use several basic and advanced tools and choose the tools most appropriate for each technique. - Reviewed work and making valid suggestions for improvement with justification.	Online Safety - Understand the following: self image & Identity ; Online Reputation; Online Relationships;Online Bullying; Managing Online Information; Health Wellbeing & Lifestyle; Copyright & Ownership; Privacy & Security. (Age appropriate sequential learning - repeating knowledge in more depth and age appropriate examples given) - Students learn the 8 strands throughout KS3 (Educated for a connected world)
	Hardware Identify the components of the CPU	Python Programming	Web Design Understand, explain and use HTML to write a

- Explain the basic function of Von neumann architecture - Know the function of ALU and Cache - Know the function of RAM and ROM and understand the role of virtual memory - Understand what clock speed is and identify factors that can affect computer performance - Know the three types of secondary storage and be able to select suitable storage media for given situations - Understand boolean algebra - Be able to complete complex truth tables and logic circuits - Predict the outcome of given logic circuits	- Describe and identify the 3 types of error that can occur - Understand the principal of index positioning in strings and lists and be able to iterate through them - Be able to manipulate strings to create sub strings - Use a variety of inbuilt python functions to manipulate lists - Use more complex data structures such as arrays and lists lists - Understand how using sub routines can make programs more efficient - Know the difference between a function and a procedure	basic web page with a range of formatting. - Use HTML tags to insert an image. - Create two basic pages and link them together using a hyperlink. - Independently use CSS code to improve the appearance of the pages. - Know how edit and add images suitable for the audience and purpose. - Select use and combine multiple applications as part of a project
Software - Know the main functions of an operating system - explain the difference between a GUI and CLI. - Explain how an operating system manages security - Know how multi tasking is controlled by the operating system - Describe how key pieces of utilities software. - Explain the difference between custom made and off-the-shelf software. - Explain the difference between open-source and proprietary software.	**Flash Animation** - Understand and create an animation. - Explain the keyword terminology (fps,frame, stage). - Plan and create a good animation including at least one tween, text, images and drawing objects. - Create an animation using a motion and shape tween to change the look of an object. - Create layers so that parts of the animation can be controlled independently. - Add a timeline effect to text or an image. - Evaluate the animation to make sure it is suitable for the purpose and target audience providing constructive criticism	**Comic Book** - Understand, explain and identify examples of genres from the 4 ages/eras of comic history. - Understand, explain and identifythe physical and non physical characteristics of comic characters and the storyline of comics. - Decide on a storyline / plot for a comic to inform others about online safety. - Create a professional looking comic book with speech bubbles, titles and captions. - Write a detailed self-evaluation including suggesting suitable improvements.