



Curriculum Map

Subject: Computer Science

Year group: 8

	Autumn 1/2	Spring 1	Spring 2	Summer 1	Summer 2
Content	<i>Python Programming</i> <i>Computational thinking techniques and problem solving : Bebras and GCHQ Challenges</i> <i>Algorithms Programming</i>	Spreadsheet modelling Data and Information <i>Creating Media</i> <i>Effective use of digital tools</i> <i>Programming</i>	Data Science Information Technology <i>Creating Media</i> <i>Design and Development</i> <i>Communication & Networks</i> <i>Algorithms</i> <i>Programming</i>	Artificial Intelligence Algorithms Programming <i>Creative media</i>	<i>Web Development</i> Design and Development Programming <i>Information Technology</i> <i>Creating Media</i> <i>Communication & Networks</i> <i>Algorithms</i>
Skills	Procedural Knowledge – ‘Know How’ Describe what algorithms and programs are and how they differ - Locate and correct common syntax errors - Recall that a program written in a programming language needs to be translated in order to be executed by a machine - Write simple Python programs that display messages, assign values to variables, and receive keyboard input Describe the semantics of assignment statements - Receive input from the keyboard and convert it to a numerical value - Use simple arithmetic expressions in assignment statements to calculate values Generate and use random integers - Use binary selection	Identify columns, rows, cells, and cell references in spreadsheet software Use formatting techniques in a spreadsheet Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) Use the autofill tool to replicate cell data Explain the difference between data and information Explain the difference between primary and secondary sources of data Collect data Analyse data Create appropriate charts in a spreadsheet Use the functions SUM,	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 Define data science Explain how visualising data can help identify patterns and trends in order to help us gain insights Use an appropriate software tool to visualise data sets and look for patterns or trends Recognise examples of where large data sets are used in daily life • Select criteria and use data set to investigate predictions Evaluate findings to support arguments for or against a prediction Define the terms ‘correlation’ and ‘outliers’ in relation to data trends Identify the steps of the investigative cycle	Defining Artificial Intelligence Understanding the difference between AI and machine learning Learning different ways in which AI and machine learning are being used in computing Learning Google teachable machine to implement basic AI and machine learning skills To discuss the validity of AI in society To think about the ethical implications of AI What is AI? What is machine learning? How have these processes	Use HTML to structure static web pages Modify HTML tags using inline styling to improve the appearance of web pages Display images within a web page Apply HTML tags to construct a web page structure from a provided design Describe what CSS is Use CSS to style static web pages Assess the benefits of using CSS to style pages instead of in-line formatting Describe what a search engine is



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	(if, else statements) to control the flow of program execution - Use relational operators to form logical expressions Describe how iteration (while statements) controls the flow of program execution - Use multi-branch selection (if, elif, else statements) to control the flow of program execution Use iteration (while loops) to control the flow of program execution - Use variables as counters in iterative programs Combine iteration and selection to control the flow of program execution - Use Boolean variables as flags	COUNTA, MAX, and MIN in a spreadsheet Analyse data Use a spreadsheet to sort and filter data Use the functions AVERAGE, COUNTIF, and IF in a spreadsheet Use conditional formatting in a spreadsheet	Solve a problem by implementing steps of the investigative cycle on a data set - Use findings to support a recommendation Identify the steps of the investigative cycle - Identify the data needed to answer a question defined by the learner Create a data capture form Describe the need for data cleansing - Apply data cleansing techniques to a data set Visualise a data set Analyse visualisations to identify patterns, trends, and outliers Draw conclusions and report findings	been implemented in wider society? What are the possible dangers of AI? What are the ethical implications of utilising AI in computing, surveillance and media industries?	Explain how search engines 'crawl' through the World Wide Web and how they select and rank results Analyse how search engines select and rank results when searches are made Use search technologies effectively Discuss the impact of search technologies and the issues that arise by the way they function and the way they are used Create hyperlinks to allow users to navigate between multiple web pages Implement navigation to complete a functioning website
Key Questions	How can I use sequence, selection and iteration to develop a program to solve a problem? What is the difference between, and appropriately I can use if and if, then and else statements. Can I use a variable and relational operators within a loop to govern termination.	Can I use criteria to evaluate the quality of solutions and identify improvements making some refinements to future solutions. How can I analyse and evaluate data to become information. Do I know that poor quality data leads to unreliable results, and inaccurate conclusions for	How can data visualisation help us identify patterns and trends in data? How can we use large data sets to investigate predictions and support or challenge our assumptions? How can we use the investigative cycle to solve problems and make evidence-based recommendations?	What is AI? What is machine learning? How have these processes been implemented in wider society? What are the possible dangers of AI? What are the ethical implications of utilising AI	What are the benefits to websites in terms of communication in using 1 universal scripting language What are the benefits of using CSS to a website How can I develop online-based platforms for a specific purpose?



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	Can I use loops and a sequence of selection statements in programs, including an IF, THEN and ELSE statement	individuals and organisations?	How do we identify a problem and collect the right data to investigate it? Why is data cleansing important, and how can we use visualisations to analyse reliable data? How can we use data to draw conclusions, communicate findings and make informed decisions?	in computing, surveillance and media industries? What are the limitations, risks and ethical implications of AI in society?	
Assessment	Mid Unit Assessment End of Unit Assessment	End of unit test	End of Unit Assessment	End of Unit Test	Website Development
Literacy/Numeracy/SMSC/Character	Problem solving and algorithmic thinking. Peer support and experimentation. Confidence. Resilience. Initiative. responsibility	Confidence. Initiative. responsibility	Writing and presenting information suitable for audience and purpose	Understanding modern technological terminologies. Integrity, Initiative, Aspiration, Creativity. Integrity.	Writing and presenting information suitable for audience and purpose