

HIGHFIELDS SCHOOL

CURRICULUM OVERVIEW 2023-2024



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SUBJECT: COMPUTER SCIENCE

KEY STAGE: 3

AUTUMN TERM - YEAR 8	SPRING TERM - YEAR 8	SUMMER TERM - YEAR 8
<p>Scratch Students will use a visual programming language to solve a variety of computational problem, making appropriate use of data structures.</p> <p>One such program is an interactive story using the following skills:</p> <ul style="list-style-type: none">• Sequence• Selection• Iteration• Variables• Algorithms	<p>Python Students will use a text programming language to solve a variety of computational problems, making appropriate use of data structures.</p> <p>Students to code algorithms that include:</p> <ul style="list-style-type: none">• Variables <p>Different Data types:</p> <ul style="list-style-type: none">• Integer• String• Boolean• Float/Real <p>Selection:</p> <ul style="list-style-type: none">• If• Else• Elif	<p>Binary logic Understand simple Boolean logic for example, and, or and not.</p> <p>Create the truth tables for electronic circuits.</p> <p>Draw electronic circuits.</p> <p>Understand how numbers can be represented in binary and be able to conduct simple mathematics on binary numbers.</p>
<p>ASSESSMENT Cross between written exam and coding solutions.</p> <p>Understand how written algorithms can be translated into a graphical programming language.</p> <p>Independently use a visual programming language to create an efficient algorithm that produces a given design.</p> <p>Describe with an example more complex terms such as sequence, selection and iteration.</p>	<p>ASSESSMENT Create a multiple-choice quiz via a text-based programming language.</p> <p>Write a complex algorithm to include inputs, variables, casting and a scoring system with If and Elif statements.</p>	<p>ASSESSMENT A formal written exam that includes:</p> <ul style="list-style-type: none">• Truth Tables• Binary to Denary Conversions• Denary to Binary Conversions• Comparison of Storage sizes

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AUTUMN TERM - YEAR 9	SPRING TERM - YEAR 9	SUMMER TERM - YEAR 9
<p>Hardware</p> <ul style="list-style-type: none"> • CPU - Clock speed, Cores, Cache • Memory - Ram, Rom, Volatile, None-Volatile • Storage - Optical, SSD and Magnetic 	<p>Algorithms</p> <p>Common Computer Science Algorithms:</p> <ul style="list-style-type: none"> • Bubble Sort • Merge Sort • Insertion Sort • Linear Search • Binary Search 	<p>Binary and Logic Gates</p> <ul style="list-style-type: none"> • Creating electronic circuits off equations • Binary to Denary Revisit • Binary to Hex • Binary Addition • Image and sounds
<p>ASSESSMENT</p> <p>Low stake test - multiple choice quizzes.</p> <p>A formal written exam on hardware.</p> <p>Reduce Character Bio for hardware.</p>	<p>ASSESSMENT</p> <p>Low stake test - multiple choice quizzes.</p> <p>Presentation animation that demonstrates the algorithms.</p>	<p>ASSESSMENT</p> <p>Low stake test - multiple choice quizzes.</p> <p>Unit examination using past GCSE exam questions.</p>
<p>Advanced Python</p> <p>Advanced Python with exam techniques.</p> <p>Students to decompose the problem and create algorithms that use sequence, selection, and variables to control the flow of the program.</p>	<p>Cyber Security and Networks</p> <ul style="list-style-type: none"> • Ethical Hacking, malware and countermeasures • Different types of networks • Difference between wired / wireless <p>Network Hardware:</p> <ul style="list-style-type: none"> • Switches • Hubs • Routers 	<p>Emerging Technology</p> <p>Investigation on emerging technology and the impacts on society:</p> <ul style="list-style-type: none"> • Electric Cars/ Auto Pilot • Virtual Reality • Drones • Artificial Intelligence
<p>ASSESSMENT</p> <p>GCSE selection Pseudocode questions.</p> <p>Low stake test - multiple choice quizzes.</p> <p>Coding challenges.</p>	<p>ASSESSMENT</p> <p>Low stake test - multiple choice quizzes.</p> <p>Unit examination using past GCSE exam questions.</p>	<p>ASSESSMENT</p> <p>Extended writing report on emerging technology.</p>