



Computer Science & Business Studies Curriculum Knowledge Map



Year 9

Future/Past Technology <ul style="list-style-type: none"> AI Impact on Society Future Tech 	<ul style="list-style-type: none"> Students learn the impact of Digital Technology and how computers have evolved over time. Research into new Tech and impact on Society including AI Students will also do independent research into AI Technology Create a product based around what they think a future tech would look like. Discuss and analyse the ethics and impact around the new Tech and AI
Legal, Ethical & Cultural Issues <ul style="list-style-type: none"> Laws around computers Ethical issues Environmental issues Moral issues Impact on Society 	<ul style="list-style-type: none"> Impacts of digital technology on wider society including: Ethical issues, Legal issues, Cultural issues, Environmental issues, Privacy issues Legislation relevant to Computer Science: The Data Protection Act 2018, Computer Misuse Act 1990, Copyright Designs and Patents Act 1998 Software licences (i.e. open source and proprietary) Students will also then learn about social engineering and other common cybercrimes, and finally look at methods to protect against these attacks.
PART 1 Introduction to Programming Techniques <ul style="list-style-type: none"> Variables Sequence Selection String Integer Input/Output 	<ul style="list-style-type: none"> Input and output Arithmetic operations Random Selection, and iteration Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution
PART 2 Programming concepts in Python <ul style="list-style-type: none"> Variables Sequence Selection String Integer Input/Output Logic gates flowcharts 	<ul style="list-style-type: none"> Algorithms Use Computational Thinking to solve a given problem Searching Algorithms Sorting Algorithms FlowCharts and their symbols Pseudocode in Python Variables - logic statements - selection
Computer Systems <ul style="list-style-type: none"> Hard Drive Motherboard CPU Topology Network Input/Output 	<ul style="list-style-type: none"> Computer systems are all linked and work together. Network topology Components within the motherboard. Understand what Input and Output components are linked to a computer system
Introduction to Business <ul style="list-style-type: none"> Entrepreneur Profit Investment Team working CEO Presentation Loss 	<ul style="list-style-type: none"> Concepts of a business How a business is created and managed by a team of entrepreneurs. Students assigned a business challenge 'Tycoons in Business' Students receive investment to put towards their business Students will learn how to work in teams and make profit from their business idea



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Year 8	
Computer Systems <ul style="list-style-type: none"> • <i>Functionality</i> • <i>Systems</i> • <i>Computers</i> • <i>Features</i> • <i>Components</i> 	<ul style="list-style-type: none"> • Decompose the functionality of a physical computing system into simpler features • Explain the use of components within the System • Design a Computer System to a given audience/User • Binary addition and why it's necessary. • Describe how binary digits are represented on a CD or image. • How the fetch - decode - execute cycle works in the CPU. • How the speed of the processor is measured. • What RAM and ROM are used for and how.
Algorithms & Flowcharts <ul style="list-style-type: none"> • <i>Algorithms</i> • <i>Programming</i> • <i>Computational Thinking</i> • <i>Flowcharts</i> • <i>Symbols</i> 	<ul style="list-style-type: none"> • Create flowcharts using all the correct symbols • Confidently break problems down and create algorithms • Creating flowcharts, • Breaking complex problems into smaller more manageable problems • Computational thinking techniques to solve problems.
Build on Programming with Python <ul style="list-style-type: none"> • <i>Syntax</i> • <i>Operations</i> • <i>Variables</i> • <i>String</i> • <i>Input/Output</i> • <i>Language</i> • <i>Machine Code</i> • <i>Algorithms</i> 	<ul style="list-style-type: none"> • Describe what algorithms and programs are and how they differ • 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 • Locate and correct common syntax errors • Use binary selection (if, else statements) to control the flow of program execution • Use selection (**if-elif-else* statements) to control the flow of program execution • Perform common operations on strings or individual characters
FLOWOL <ul style="list-style-type: none"> • <i>Flowchart symbols</i> • <i>Subroutine</i> • <i>Parameter</i> • <i>Input</i> • <i>Output</i> • <i>Run</i> 	<ul style="list-style-type: none"> • Understand that computers need precise instructions. • Identify common types of sensors used in control systems • Identify control flowchart symbols and understand how they are used to describe systems. • Recognise that computers follow the control flow input, process, output. • Create a control system for a given scenario • Use decision systems in a flowchart. • Develop a control solution for a system that uses multiple sensors. • Develop a control solution for a system that includes a subroutine
Web Design - HTML <ul style="list-style-type: none"> • <i>HTML</i> • <i>Tags</i> • <i>Web design</i> • <i>Image size/Dimensions</i> • <i>Formatting</i> • <i>Audience</i> 	<ul style="list-style-type: none"> • Apply HTML tags to construct a web page structure from a provided design • Modify HTML tags using inline styling to improve the appearance of web pages • Display images within a web page • Discuss the impact of search technologies. • Create hyperlinks to allow users to navigate with ease • 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. • Implement navigation to complete a functioning website.
Python Development - Making a game <ul style="list-style-type: none"> • <i>Syntax</i> • <i>Operations</i> • <i>Variables</i> • <i>String</i> • <i>Input/Output</i> • <i>Language</i> • <i>Machine Code</i> • <i>Algorithms</i> 	<ul style="list-style-type: none"> • Creating software to allow computers to solve problems • Use selection (**if-elif-else* statements) to control the flow of program execution • Use iteration (while statements) to control the flow of program execution • Perform common operations on strings or individual characters • Create a game with Python showing key skills and techniques taught



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Year 7

<p>Online Safety iDEA</p> <ul style="list-style-type: none"> • Cyberbullying • Online security • GDPR • Fraud • Social Media • Fake News • Impacts on mental health • Digital Footprint 	<ul style="list-style-type: none"> • Understand a range of ways to use technology safely, respectfully, responsibly and securely, • Protecting their online identity and privacy; • Recognise inappropriate content, contact and conduct • Know how to report concerns • Understanding risks when using technology • How to protect individuals and systems • Understand Netiquettes • Understand Digital Footprint and how this has an impact on our everyday lives • Understand the right way to search to find what you are looking for safely online. • Be able to make sense of what online content is based on facts, half-truths and lies. • Learn why it is important to know who you are talking to online. • Learn how to manage self discipline online and social media usage
<p>Inside a Computer System</p> <ul style="list-style-type: none"> • Binary • Hardware • Software • Computer Systems • Instructions • Execute • Systems 	<ul style="list-style-type: none"> • Understand the hardware and software components that make up computer systems • How components communicate with one another and with other systems • Understand how instructions are stored and executed within a computer system • Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits • How the fetch - decode - execute cycle works in the CPU. • How the speed of the processor is measured. • What RAM and ROM are used for. • Future of technology like driverless cars, artificial intelligence, home help robots and robot pets.
<p>Introduction to Programming Statements</p> <ul style="list-style-type: none"> • Variables • Operations • Strings • Integer • Execute • Syntax • Run 	<ul style="list-style-type: none"> • Use selection (**if-elif-else* statements) to control the flow of program execution • Use iteration (while statements) to control the flow of program execution • Perform common operations on strings or individual characters
<p>Introduction to Algorithms</p> <ul style="list-style-type: none"> • Algorithm • Sequence • Selection • Iteration 	<ul style="list-style-type: none"> • To be able to use the thinking techniques to solve problems. • Securely describe the 4 computational thinking techniques giving examples of their use • Recognise patterns and creating algorithms.
<p>Macbeth - Digital Literacy</p> <ul style="list-style-type: none"> • Comic strip • Digital Literacy • Content creation • Layout 	<ul style="list-style-type: none"> • Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability • Select and create a range of media including text, images, sounds and video.