

Curriculum Overview 2024-25 Computing

Curriculum overview for Year 7

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>Impact of technology – Collaborating online respectfully</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Create a memorable and secure password for an account on the school network - Remember the rules of the computing lab - Find personal documents and common applications - Recognise a respectful email - Construct an effective email and send it to the correct recipients - Describe how to communicate with peers online - Describe cyberbullying - Explain the effects of cyberbullying - Check who you are talking to online 	<p>Using media – Gaining support for a cause</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Identify the key features of a word processor - Evaluate formatting techniques to understand why we format documents - Select appropriate images for a given context - Apply appropriate formatting techniques - Demonstrate the ability to credit the original source of an image - Critique digital content for credibility - Apply techniques in order to identify whether or not a source is credible - Understand the concept of plagiarism 	<p>Modelling data</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Identify columns, rows, cells, and cell references in spreadsheet software 	<p>Networks and Networking</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Define what a computer network is and explain how data is transmitted between computers across networks - Define ‘protocol’ and provide examples of non-networking protocols - Define what the internet is - Explain how data travels between computers across the internet - Describe key words such as ‘protocols’, ‘packets’, and ‘addressing’ - Describe how services are provided over the internet - List some of these services and the 	<p>Introduction to programming</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Compare how humans and computers understand instructions (understand and carry out) - Define a sequence as instructions performed in order, with each executed in turn - Predict the outcome of a simple sequence - Define a variable as a name that refers to data being stored by the computer - Recognise that computers follow the control flow of input/process/output - Trace the values of variables within a sequence 	<p>Programming for computer systems - Hardware</p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Recall that a general-purpose computing system is a device for executing programs - Recall that a program is a sequence of instructions that specify operations that are to be performed on data - Recall that all computing systems, regardless of form, have a similar structure (‘architecture’) - Recall that, since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits - Provide broad definitions of ‘artificial

	<p>Skills: Plan effective presentations for a given audience - Describe cyberbullying - Explain the effects of cyberbullying - Plan effective presentations for a given audience.</p> <p>Introducing Diversity Champions.</p>	<p>- Evaluate online sources for use in own work - Construct a blog using appropriate software</p> <p>Skills: - Select the most appropriate software to use to complete a task - Apply the key features of a word processor to format a document</p>	<p>Skills: - 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.</p>	<p>context in which they are used - Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together</p> <p>Skills: List examples of the hardware necessary for connecting devices to networks - Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections - Explain the difference between the internet, its services, and the World Wide Web</p>	<p>Skills: Modify a sequence Make a sequence that includes a variable Identify where count-controlled iteration can be used in a program - Implement count-controlled iteration in a program - Detect and correct errors in a program (debugging) Introducing Microbit block editor.</p>	<p>intelligence’ and ‘machine learning’ - Associate the use of artificial intelligence with moral dilemmas - Explain the implications of sharing program code</p> <p>Skills: Explain the difference between a general-purpose computing system and a purpose-built device - Describe the function of the hardware components used in computing systems - Describe the NOT, AND, and OR logical operators, and how they are used to form logical expressions - Use logic gates to construct logic circuits, and associate these with logical operators and expressions</p> <p>Introducing Microbit MicroPython.</p>
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Curriculum overview for Year 8

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>Programming constructs</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in Introduction to programming, Introduction to Computing Hardware and modelling data</i></p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Define a subroutine as a group of instructions that will run when called by the main program or other subroutines - Define decomposition as breaking a problem down into smaller, more manageable subproblems - Identify how subroutines can be used for decomposition - Identify where condition-controlled iteration can be used in a program 	<p>Developing for the web</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in Introduction to programming and Networks and Networking</i></p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Describe what HTML is - Describe what CSS is - Assess the benefits of using CSS to style pages instead of in-line formatting - Describe what a search engine is - 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 	<p>Developing in Python</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in Introduction to programming and Developing for the web.</i></p> <p>Key Knowledge:</p> <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 	<p>Representations – from clay to silicon</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in Modelling data and the previous programming units.</i></p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - List examples of representations - Recall that representations are used to store, communicate, and process information - Provide examples of how different representations are appropriate for different tasks - Recall that characters can be represented as sequences of symbols and list examples of character coding schemes 	<p>Cybersecurity</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in Representations – from clay to silicon and Networks and Networking.</i></p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Explain the difference between data and information - Critique online services in relation to data privacy - Identify what happens to data entered online - Explain the need for the Data Protection Act - Recognise how human errors pose security risks to data - Implement strategies to minimise the risk of data being 	<p>Mobile app development</p> <p>Prior learning <i>This unit builds upon the skills and knowledge developed in the previous programming units and Using media – Gaining support for a cause</i></p> <p>Key Knowledge:</p> <ul style="list-style-type: none"> - Identify when a problem needs to be broken down - Implement and customise GUI elements to meet the needs of the user - Recognise that events can control the flow of a program - Use user input in an event-driven programming environment - Use variables in an event-driven programming environment

	<p>- Implement condition-controlled iteration in a program</p> <p>Skills: Use decomposition Use abstraction Use Iteration For – While. Identify the problems to using indefinite iteration. Use lists Use subroutines</p>	<p>Skills: 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 - Use CSS to style static web pages</p>	<p>Skills: - 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 - Use multi-branch selection (if, elif, else</p>	<p>- Measure the length of a representation as the number of symbols that it contains - Provide examples of how symbols are carried on physical media</p> <p>Skills: - Convert a decimal number to binary and vice versa - Convert between different units and multiples of representation size - Provide examples of the different ways that binary digits are physically represented in digital devices</p>	<p>compromised through human error - Define hacking in the context of cyber security - Explain how a DDoS attack can impact users of online services</p> <p>Skills: - Question how malicious bots can have an impact on societal issues - Compare security threats against probability and the potential impact to organisations - Explain how networks can be protected from common security threats</p>	<p>- Develop a partially complete application to include additional functionality - Identify and fix common coding errors - Pass the value of a variable into an object - Establish user needs when completing a creative project - Apply decomposition to break down a large problem into more manageable steps - Evaluate the success of the programming project</p> <p>Skills: - Use user input in a block-based programming language - Use a block-based programming language to create a sequence - Use variables in a block-based programming language - Use a block-based programming language to include sequencing and selection</p>
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		<ul style="list-style-type: none"> - Use search technologies effectively 	<ul style="list-style-type: none"> statements) to control the flow of program execution - Use relational operators to form logical expressions - Use binary selection (if, else statements) to control the flow of program execution 		<ul style="list-style-type: none"> - Identify the most effective methods to prevent cyberattacks 	<ul style="list-style-type: none"> - Use user input in a block-based programming language - Use variables in a block-based programming language - Reflect and react to user feedback - Use a block-based programming language to include sequencing and selection - Use user input in a block-based programming language - Use variables in a block-based programming language
	<p>Future links: The students learn the 'rules' of programming. Moving their skills and knowledge forward to consider how computing systems are used in the wider world to analysis data and crunch numbers</p>	<p>Future links: The students learn how to develop and manipulate HTML & CSS which is the backbone of the World Wide Web. This unit will support the students understanding for the systems the students will use throughout their learning and working lives and social lives.</p>	<p>Future links: This unit builds upon the students' knowledge of programming using Python the world's largest programming language. Looking deeper at its constructs and developing the student's resilience and problem-solving skills. This unit will support the students understanding for the</p>	<p>Future links: This unit builds upon the students' knowledge of data analysis, representation of data, where data comes from and how business use data. For Apple, Google, Amazon, Meta and all other computing industries who consider Data as the new Money.</p>	<p>Future links: This unit builds upon the students' knowledge of data, data processing, networking the internet and business uses of data. This unit will support the students understanding for the systems the students will use throughout their learning and</p>	<p>Future links: This unit builds upon the students' knowledge of programming using JavaScript the world's 2nd largest programming language. Having knowledge of a second programming language widens the students understanding of the world of computing.</p>

Curriculum overview for Year 9

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>Online Safety</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in Impact of technology – Collaborating online respectfully and Networks and Networking.</i></p>	<p>Python Advanced</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in Programming constructs and Introduction to Python Programming.</i></p>	<p>ICT in the World of Work</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in Impact of technology – Collaborating online respectfully, Modelling data, Networks and Networking and using media to gain support for a cause.</i></p>	<p>User Interfaces.</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in ICT in Business, Introduction to Python Programming, programming construct and Developing for the web.</i></p>	<p>Introduction to AI</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in Impact of technology – Collaborating online respectfully, Modelling data, Networks and Networking.</i></p>	<p>GCSE Ready Skills</p> <p>Prior learning: <i>This unit builds upon the skills and knowledge developed in Impact of technology – Collaborating online respectfully, e-safety, Online safety, Social media setup, Modelling data, Networks and Networking, using media to gain support for a cause, ICT in business, cybersecurity, programming constructs, Python Programming, Developing with HTML, User Interfaces and Project Management.</i></p>

	<p>Key Knowledge: Discuss the main safety concerns of being online Reflect on online activity from a safety perspective Define online reputation and discuss what it is made up of Discuss techniques on how to build a positive online reputation Discuss the ways in which one's online reputation might be under threat and how to defend it Define the terms 'big data' and 'data analytics'</p>	<p>Key Knowledge: Python programming with sequences of data - Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements - Locate and correct common syntax errors - Create lists and access individual list items</p> <p>Skills: - Use iteration (for statements) to iterate over list items - Perform common operations on lists or strings</p>	<p>Key Knowledge: Examine traditional and modern team working Interpret the advantages and disadvantages of 24/7/365 availability Compare inclusivity and accessibility within traditional and modern teams Making marketing decisions Marketing mix Product Price Place Promotion Marketing mix decisions</p> <p>Skills: Market mapping and segmentation Market research, Primary & Secondary. Quantitative and Qualitative methods</p>	<p>Key Knowledge Examine modern technology tools that help with inclusivity and accessibility Explore communication tools Evaluate collaborative working Explain Collaboration methods. Explain different communication methods, Explain accessibility requirements and legislation. Explain the importance inclusivity for digital systems.</p> <p>Skills: Planning Develop an interface design for individual and organisation.</p>	<p>Key Knowledge: Describe the difference between 'data-driven' and 'rule-based' approaches to application development. Define machine learning's relationship to artificial intelligence Describe how classification can be solved using supervised learning Accuracy of a machine learning (ML) model Bias and Fake News Explain the need for both training and test data Use a machine learning tool to import data and train a model Test and examine the accuracy of an ML model</p> <p>Skills: Create a Decision tree. Create a LM using, image and text prompts. Create a PERT chart</p>	<p>Key Knowledge e-safety Being safe online Cyber Security Social Media & Ethics Digital Ethics</p> <p>Digital Pathways Personal Statements Interviews e-commerce Effective social media setup Projects</p> <p>Researcher The art of selling Jargon Buster Influencer Using Social Media in Business</p> <p>Growth mindset Advertising Money management</p>
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	<p>Future Links: <i>Knowing how to navigate the Internet, reading and considering the validity and bias, considering what is real and what is fake news. Developing filters to ensure that all decisions are made using the correct data. This unit will support the students understanding for the systems the students will use throughout their learning and working lives and social lives</i></p>	<p>- Use iteration (for loops) to iterate over lists and strings - Use variables to keep track of counts and sums</p> <p>Future Links: <i>This unit introduces the idea of being a digital citizen this links to all future skills as students will have to navigate the constant intrusion of digital mediums into all aspects of life. This unit prepares the students with the deeper knowledge and understanding required to continue the study of computer science for GSCE, college and the working world.</i></p>	<p>Competition Costs, revenue and profit</p> <p>Future Links: <i>This unit introduces the idea of being a digital citizen this links to all future skills as students will have to navigate the constant intrusion of digital mediums into all aspects of life. The development of Computing has changed the world of commerce to become 24/7 365 days, always on business world we know. This unit uncovers the synergy between business and computing and looks at the working world and the essential skills</i></p>	<p>Create a word-processed report with annotated screenshots of the user interface prototype</p> <p>Develop an electronic copy of the prototype of the interface.</p> <p>Evaluate their UIL</p> <p>Future Links: <i>This unit introduces the idea of being a digital citizen this links to all future skills as students will have to navigate the constant intrusion of digital mediums into all aspects of life. This unit introduces the students to the developments of User Interfaces and User Experience. These features are key in developing successful interface and software. For example, the 'Apple look'. This is area of</i></p>	<p>Evaluate planning tools Create LM</p> <p>Future Links: <i>This unit introduces the student to real-world AI applications and be made aware of the ever-increasing range of AI-related careers. Considering the social and ethical implications of AI developments. Exploring machine learning models and the engines that make them work. Creating your own machine learning models. Understanding the stages of the AI project lifecycle.</i></p>	<p>Future Links: <i>This unit introduces the idea of being a digital citizen this links to all future skills as students will have to navigate the constant intrusion of digital mediums into all aspects of life.</i></p>
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