

What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to ensure students experience a broad and balanced experience in Computing, which prepares them effectively for the workplace and as active participants in the digital world. The curriculum offers a balanced approach which will equip students to use computational thinking, principles of information, how digital systems work and how to put this knowledge to use through programming, the creation of systems and a range of content. This curriculum also ensures that students can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems and ultimately are responsible, digitally literate, confident and creative users of information and communication technology.

The national curriculum for computing aims to ensure that all students can understand and apply the fundamental principles and concepts of computer science, including logic, algorithms and data representation. It also covers online safety, with progression in the content to reflect the different and escalating risks that young people face as they get older. This includes how to use technology safely, responsibly, respectfully and securely, how to keep personal information private, and where to go for help and support.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	Spreadsheets Theme: The Quiz	<p>In this unit students will be engaging in activities using Microsoft Excel where they will progress from using basic formulas to writing their own formula statements to write and present a quiz.</p> <p>All students to understand how data and information are used and calculated linking into job prospects of being able to track accounts and money through use of data modelling spreadsheets.</p> <ul style="list-style-type: none"> - Output - Tables - Charts 	<p>Understand the concept of spreadsheets and why spreadsheets are useful. Learn how to navigate a spreadsheet via its rows and columns, and become familiar with the cell referencing system. Locate and select ranges of cells and change cells' background colour and border properties.</p> <ul style="list-style-type: none"> - Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems - 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 	<p>A practical assessment where students design their own version of making a quiz.</p> <p>Read Vocabulary</p> <p>Websites:</p> <p>http://icted.me.uk/category/year-7-spreadsheets/ https://www.metoffice.gov.uk/ https://www.bbc.co.uk/weather https://news.sky.com/weather</p> <p>Knowledge Organiser Spreadsheets</p>

		<ul style="list-style-type: none"> - Searching - Sorting Database 	<p>Programmer Software Engineer Meteorologist</p>	
<p>Autumn 1</p>	<p>Theme: Online Safety</p>	<p>In this short unit students are reminded about staying safe online, using emails, social media and completing tasks remotely.</p> <ul style="list-style-type: none"> - Acceptable use policy - File types - Naming conventions - File management - Backup - Social networking - Cyberbullying - Privacy - Password - Identify theft - Phishing - Search engine cookies - Gambling - Sexting - Grooming - pornography - PIN - AI - Honesty - Integrity - Ways to use technology safely - Create, reuse, revise and repurpose digital artefacts - The benefits of strong passwords 	<p>Developing Skills to remaining safe while online including using online communication tools correctly.</p> <ul style="list-style-type: none"> - Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise acceptable/unacceptable or inappropriate content, contact, conduct or behaviour and know how to report concerns. - The characteristics of positive and healthy friendships (in all contexts, including online) including: trust, respect, honesty, kindness, generosity, boundaries, privacy, consent and the management of conflict, reconciliation and ending relationships. This includes different (non-sexual) types of relationship. - Their rights, responsibilities and opportunities online, including that the same expectations of behaviour apply in all contexts, including online. - About online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online. 	<p>Year 8 Online Baseline test Multiple – Choice Online Tests Read Vocabulary</p> <p>Websites: Office 365 https://unsplash.com/ https://www.canva.com/en_gb/ https://www.google.co.uk/intl/en-GB/drive/</p> <p>Websites: www.bbc.co.uk/bitesize/guides/z36nb9q/revision/2 www.nibusinessinfo.co.uk/content/benefits-computer-networks https://beinternetawesome.withgoogle.com/en_uk www.speedtest.net www.youtube.com/watch?v=Dxccc6ycZ73M www.submarinecablemap.com www.youtube.com/watch?v=ewrBaIT_eBM lifehacks.io/facts-about-the-internet www.youtube.com/watch?v=ZTM9GA-4nBA seotribunal.com/blog/google-stats-and-facts https://www.bbc.co.uk/bitesize/topics/z67ncdm www.lifewire.com/most-common-tlds-internet-domain-extensions-817511 www.yougetsignal.com/tools/network-location/</p>

- The concept of the digital footprint
 - The positive and negative impact of social media
 - The relationship between the internet and social media
- A basic understanding of the relevant legislation

- That in school and in wider society they can expect to be treated with respect by others, and that in turn they should show due respect to others, including people in positions of authority and due tolerance of other people's beliefs.
- About different types of bullying (including cyberbullying), the impact of bullying, responsibilities of bystanders to report bullying and how and where to get help.
- That some types of behaviour within relationships are criminal, including violent behaviour and coercive control. How information and data is generated, collected, shared and used online.
- The similarities and differences between the online world and the physical world, including: the impact of unhealthy or obsessive comparison with others online (including through setting unrealistic expectations for body image), how people may curate a specific image of their life online, over-reliance on online relationships including social media, the risks related to online gambling including the accumulation of debt, how advertising and information is targeted at them and how to be a discerning consumer of information online.

Network manager/IT Technician

Python

Theme:
Translation services
Booking a cinema
ticket International
Customs Desk

In this unit students will build on their skills in non-textual languages using simple inputs and outputs as they are moved through arithmetic operations, randomness, selection and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution. Introduction to programming AI. Students will be expected to make an online travel customs with different language options.

- Microsoft IT Systems for College & Home
- IDLE
- Print
- While
- Operators
- Loop
- For loop
- If else
- Else-if
- Syntax
- Comment
- Output
- String
- Integer
- Float

Students need to think about the output of anything they develop in short is it ethical & legal to do so in what the program does, thinking also about ensuring programs run effectively reducing computers runtime ensuring environmental concerns are thought about. Design, use and evaluate computational abstractions. Key algorithms that reflect computational thinking. Compare the utility of alternative algorithms. Use multiple programming languages. Develop modular programs. Make appropriate use of data structures. How instructions are stored and executed. How data can be represented and manipulated digitally.

- Understand computer network including the internet how they can provide multiple services such as the www and the opportunities they offer for communication and collaboration.
- use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- the legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal.
- about online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online.

Websites:

<https://www.gutenberg.org/ebooks/345>
<https://docs.python.org/3/>
<https://projects.raspberrypi.org/en>
<https://trinket.io/>
<https://replit.com/>
<https://teachcomputing.org/secondary-question-banks>

Knowledge Organiser

[Introduction to Python](#)

			<ul style="list-style-type: none"> - not to provide material to others that they would not want shared further and not to share personal material which is sent to them. <p>Programmer Software Engineer</p>	
Autumn 2	<p>Binary Bits and Bobs</p> <p>Theme: Link between logical computers and physical instruments</p>	<p>In this unit students will discover how numbers can be represented in binary and be able to carry out simple operations on binary numbers for example, binary addition, and conversion between binary and decimal. This unit applies and enhances the learners' programming skills in a new engaging context: physical computing, using the BBC micro:bit.</p> <ul style="list-style-type: none"> - Binary - Denary - Representation - ASCII - Bitmap - Numbers - Characters - Images - Sound - Pixel - Sampling - Digital processing - Analogue 	<p>Developing physical computing projects. Sensing and controlling with the micro:bit.</p> <p>In the first half of the unit, learners will get acquainted with the host of components built into the micro:bit, and write simple programs that use these components to interact with the physical world. In the process, they will refresh their Python programming skills and encounter a range of programming patterns that arise frequently in physical computing applications.</p> <p>In the second half, learners will work in pairs to build a physical computing project. They will be required to select and design their project purposefully, apply what they have learnt by building a prototype, and keep a structured diary throughout the process.</p> <ul style="list-style-type: none"> - The legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal. - Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, 	<p>Short 200 word research essay Read Vocabulary</p> <p>Websites: https://makecode.microbit.org/ https://microbit.org/code/ https://www.itpro.com/desktop-hardware/26289/13-top-bbc-micro-bit-projects https://www.hackster.io/microbit/projects</p> <p>Knowledge Organiser Binary Bits and Bobs</p>

		<ul style="list-style-type: none"> - Digital. - Variable - Microbit - Compass - Bluetooth - Repetition - Data - Information - Accelerometer - Processor - Micro USB connector - Relational Operators - Loop - Event Handler <p>Random</p>	<p>and conversion between binary and decimal.</p> <ul style="list-style-type: none"> - 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. - That in school and in wider society they can expect to be treated with respect by others, and that in turn they should show due respect to others, including people in positions of authority and due tolerance of other people's beliefs. <p>Programmer Software Engineer</p> <p>Network manager/IT Technician</p>	
<p>Spring 1</p>	<p>Scratch 2</p> <p>Theme: Robot Lawn Mower Top Golf</p>	<p>In this unit students will build confidence and knowledge of the key programming concepts, these are sequencing, variables, selection, and count-controlled iteration. They will follow up on what was learned in Year 7. Student will be expected to programme a Robot Lawn Mower Robot and collecting all of the balls at Top Golf.</p> <ul style="list-style-type: none"> - Subroutine - Selection - Count-controlled iteration - Operators - Variables - Debugging - Logical operators - Boolean operators 	<p>Students will learn to develop subroutines, use different conditional control iteration, evaluate requirements and use lists where appropriate. Allow decomposition of tasks and apply appropriate building constructs</p> <ul style="list-style-type: none"> - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical 	<p>Multiple –Choice Online Tests Read Vocabulary</p> <p>Websites: scratch.mit.edu en.wikipedia.org/wiki/Five_Little_Ducks en.wikipedia.org/wiki/Software_bug https://www.bbc.co.uk/bitesize/topics/z7d634j</p>

		<ul style="list-style-type: none"> - Sequence - Input - Process - Output 	<p>systems; solve problems by decomposing them into smaller parts</p> <ul style="list-style-type: none"> - Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems <p>Programmer Software Engineer</p>	<p>Knowledge Organiser Scratch 1 Scratch 2</p>
<p>Spring 2</p>	<p>Mobile App</p> <p>Theme: Using event-driven programming to create an online gaming app</p>	<p>In a world where there's an app for every possible need, this unit aims to take the learners from designer to project manager to developer in order to create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Learners will work in pairs to consider the needs of the user; decompose the project into smaller, more manageable parts; use the pair programming approach to develop their app together; and finish off by evaluating the success of the project against the needs of the user.</p> <ul style="list-style-type: none"> - Event handling - Sequencing - Input - Variables - Selection - Operators - Decompose - Block-based - Event-driven 	<p>Students need to be able to understand what it takes to go from designer to project manager to develop & create their own mobile app. They will familiarise themselves with online environment and the opportunity to build on programming concepts to develop their own project. Linking in decomposition of a project into small steps, pair programming approach to develop the app and finish by evaluating the success of it.</p> <ul style="list-style-type: none"> - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical 	<p>Multiple –Choice Online Tests Read Vocabulary</p> <p>Websites: https://code.org/educate/applab https://www.bbc.co.uk/bitesize/topics/z7d634j https://www.bbc.co.uk/bitesize/topics/z7tp34j</p> <p>Knowledge Organiser Mobile Apps</p>

		Variables	<p>systems; solve problems by decomposing them into smaller parts</p> <ul style="list-style-type: none"> - Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems <p>Programmer App designer Software Engineer</p>	
Summer 1	<p>HTML</p> <p>Theme: Developing a webpage to promote a product on the Web</p>	<p>In this unit students will be using HTML and CSS to create webpages which promotes a product. Looking at how web development influences people's decisions and what is important to ensure information is accurate and trustworthy.</p> <ul style="list-style-type: none"> - Block-based - Introduction to HTML - BasicTags - Heading - Horizontal Rule - Paragraphs-Fonts-Body (and it's properties)- Images-Hyperlinks. 	<p>Students will look at the building blocks of website creation, looking at content, formatting and HTML formatting, use of researching the web and best methods, as well as website navigation, create, reuse, revise and repurposed digital artefacts for a given audience with attention to trustworthiness design and usability.</p> <p>Use of programming language, which is textual to solve a variety of computational problems.</p> <ul style="list-style-type: none"> - Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems - 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 <p>Programmer Software Engineer Web designer</p>	<p>A practical assessment where students design their own version of a marketing webpage.</p> <p>Read Vocabulary</p> <p>Websites: https://www.programiz.com/html/online-compiler/ https://www.w3schools.com/html/ https://www.w3schools.com/css/ https://www.bbc.co.uk/bitesize/topics/zxnfr82</p> <p>Knowledge Organiser HTML</p>