Curriculum Mapping: Computer Science   Year 7-9

St Martin's School
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Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Getting started	*Introducing spreadsheets*	*Computing: past, present and future*	*Programming in Scratch*	*Computing components*	*Programming in Python: sequence*
Year 7	*Concepts/Tier 3 vocabulary* Network, Bitmap, Server, VLE, Resolution, Vector, Internet, Folder, Cloud	*Concepts/Tier 3 vocabulary* Columns, Rows, Cell, Relative, Absolute, Function, SUM, MIN, IF, COUNTA, Conditional Formatting, Pie Chart, Goal seek	*Concepts/Tier 3 vocabulary* *Alan Turing, Word processor, Algorithm, Values, Gordon Moore, Tim Berners-Lee, Flowchart, Transistors, Ada Lovelace*	*Concepts/Tier 3 vocabulary* *Sequencing, Iteration, Selection, Logic, Variable*	*Concepts/Tier 3 vocabulary* *HDD, Fan, Hertz, MB, Secondary Storage, Primary storage, IOT, Solid state*	*Concepts Tier 3 vocabulary* *Variable, Concatenation, Input, Array, Float, Casting, String, Constant, List*
	Justification: Students are introduced to how to use the computer on the school network. Know the processes for logging into the school's network. Know the processes for sending and receiving emails. Understand how to save, rename and organise files Understand how to access files stored in the cloud. Understand key principles of Internet safety Understand the qualities of vector and bitmap graphics	**Justification:** Students are introduced to syntax using formulas and functions. Understand how to write basic formulae in a spreadsheet. Understand the concept of replication and the uses of relative and absolute cell referencing. Understand how to name cells and ranges within a spreadsheet. Understand how to write a range of basic functions including SUM, AVERAGE, MAX, MIN, COUNT and IF. Understand how to use conditional formatting. Understand how to use data in a spreadsheet to create graphs and charts	**Justification:** Students learn why computer science is a pivotal subject. Students know about important figures in the development of computing. Understand Moore's Law and how computer technology has developed and changed over time. Know how to format documents. Understand the importance of aesthetics when presenting information and have an awareness of factors that can inhibit this.	**Justification:** *Following on from spreadsheets students are taught visual programming. Understand the concepts of sequencing, selection and iteration*	**Justification:** *From Scratch students are taught the different components that are controlled from code. Know about and understand the function of a range of input and output devices. Know about and understand different types of memory and storage and their use*	**Justification** *From Scratch students are transferred to a text-based programming language. Understand a range of basic programming constructs in Python. Know how to print to the screen, perform calculations, take inputs and store them in suitably named variables*

Assessment:
All units include self-marking quizzes to check knowledge at the end of each lesson. There is also a practical summative assessment at the end of each module, which draws together skills and knowledge from the previous lessons.

Wider reading/Cultural capital
Throughout KS3 there are opportunities for students to access varied curriculum that is ambitious and goes beyond that the National Curriculum requires. From the onset we focus on ensuring that our students are aware of the ethical, legal, environmental, and cultural issues related to computer science. Students are regularly reminded how to be respectful digital citizens. A solid understanding of how technology works from the inside out and how it affects the real world is vital for students to be able to succeed. The department also run Lego Club and a Computational Thinking Competition

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Advanced spreadsheets	*Algorithms*	*Programming in Python: selection*	*Internet safety, cyber security and encryption*	*Binary and computer logic*	*Sound and video editing*
Year 8	*Concepts/Tier 3 vocabulary* *Drop down list, VLOOKUP, Sort, Check box, linked cell, macro, AND, OR, REPT*	*Concepts/Tier 3 vocabulary* Decomposition, abstraction, algorithm, computational thinking, pattern recognition, flow chart	*Concepts/Tier 3 vocabulary* *Logical operator, random, MOD, floor division*	*Concepts/Tier 3 vocabulary* *Avatar, social media, privacy settings, hacking, brute force attack, shoulder surfing, phishing, hyperlink, malware, firewall, key, encryption*	*Concepts/Tier 3 vocabulary* Binary, hexadecimal, ASCII, AND, OR, NOT	*Concepts Tier 3 vocabulary* Timeline, voiceover, reverb, compression, soundtrack, export, transition
	Justification: From introduction to spreadsheets students build on current knowledge. Understand the structure and use of a range of more advanced functions. Understand how to use validation to create dropdown lists. Know how to sort data and run simple queries. Understand the use of macros to automate processes and know how to record, edit and assign macros	*Justification:* From Python students are introduced to key algorithms. Understand the concepts of abstraction, decomposition, pattern recognition and algorithms. Know how to read and develop flow diagrams	*Justification:* From Python students build on current knowledge. Understand how to use selection in Python. Understand how to program condition-controlled loops in Python	*Justification:* From getting started students build and reflect on current knowledge in being safe in an online world. Understand a range of malware and the effects they have. Know what precautions to take to maintain safety online. Understand the role of encryption in maintaining safety online. Know about a range of ciphers	*Justification:* From coding and understanding computers, students are taught some of the maths that underpins computer science. Understand binary and why it is used in computing. Know how to convert between denary and binary. Understand how binary is used to encode text and images. Understand the concept of AND, OR and NOT gates and their use in computer programs	*Justification:* From binary students learn how maths is used to build the online world that we see and hear. Understand how to use audio editing software. Know about a range of effects that can be applied to sound files. Understand how to use video editing software. Know how to combine images and sound
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Year 9	*Designing websites*	**Networking and the Internet**	*Programming in Python: iteration*	*The ethics of computing*	*Independent Project*	
	Concepts/Tier 3 vocabulary *CSS, HTML, tag, style sheet, semantic element*	**Concepts/Tier 3 vocabulary** IP, switch, browser, domain, DNS, packet, cloud, hotspot	**Concepts/Tier 3 vocabulary** *Iteration, for, while, range, Boolean*	**Concepts/Tier 3 vocabulary** *Illegal, immoral, footprint, e-waste, DPA, copyright[*	**Concepts/Tier 3 vocabulary** *Relevant to individual's project*	
	Justification: From coding students go onto scripting to build their own artefacts in an online world. Know a range of basic HTML tags to control the presentation, styling and layout of information on a webpage. Know how to include images and links on a webpage. Understand the role of CSS. Appreciate the factors that contribute to a well-presented web page	*Justification:* From websites students learn the difference between networks and the importance of managing their online footprint. Understand how data is sent across a network. Know the role of a range of basic hardware involved in networking, such as switches. Understand the role of IP addresses. Understand domain names and DNS. Know about a range of Internet services	*Justification:* Students continue to build programming expertise preparing for GCSE computer science. Understand how to program count-controlled loops in Python. Understand the concept of nested loops	*Justification:* From the three years they understand the power that computer science can bring to companies and Government. Understand the role of algorithms in decision making. Understand the importance of intellectual property and copyright	*Justification:* Students work independently to design, develop and create a substantive product using a range of software and techniques studied at KS3.	

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