St. Matthew's Roman Catholic High School

KS3 Computing Curriculum

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Through our Computing curriculum at St Matthew's, we equip pupils with knowledge and experiences to be digitally literate citizens, with an astute awareness of their online presence and its lasting impact. As a result of the curriculum, they can use computational thinking and apply their knowledge, take all technological opportunities available confidently, and use their core IT skills to shape their ambitions.

Year 7 Curriculum

Learning Focus	Being a SMRCHS Digital Student and safe use of IT	Introduction to Computer Science	Algorithmic thinking & logic	Scratch Programming	Digital Literacy (PowerPoint)
Learning Hours Associated	Week 1-6 6 Hours Approx.	Week 7-12 6 Hours Approx.	Week 13-17 4 Hours Approx.	Week 18-26 8 Hours Approx.	Week 27-39 8 Hours Approx.
What pupils will know, understand and be able to do.	✓ Know the dangers of using digital technologies. ✓ Know how to log onto IT systems ✓ Able to use a range of apps and confidently move use a range of apps ✓ Able to safely use the internet ✓ To be able to Teams and Sharepoint and use a range of features within.	✓ Know the Input, process & output process. ✓ Understand the difference between input/output devices. ✓ Able to justify the choices between input/output ✓ Know the different parts of the computer. ✓ Understand how the different parts of the computer work ✓ Able to justify the choice of hardware in a system. ✓ To know what a network is.	✓ Understand what algorithms are and how to represent them using lists and flow charts. ✓ Understand what iteration and selection are within algorithmic thinking. ✓ To know the different shapes used to create a flow chart. ✓ Be able to apply algorithmic thinking to scenarios.	✓ Understand the basic UI of scratch. ✓ To know how to use algorithmic logic within the scratch UI (block based messages). ✓ Know how to create their own variables to store integers. ✓ Understand how to represent selection using if statements. ✓ Know how to use iteration correctly within a programming context. ✓ Know how to use the design features for using different sprites and backgrounds.	✓ Know how to use custom shapes for design purposes and placing of text. ✓ Know how to use shapes to create buttons and using links effectively. ✓ Understand how to use animations appropriately. ✓ Understand how to use transitions effectively. ✓ Know how to use the format options to customise different aspects of PowerPoint. ✓ Understand design techniques such as wireframing,

		✓ Understand the two main types of network LAN/WAN ✓ Able to evaluate the best type of network for different scenarios ✓ Know what binary code. ✓ Understand why binary code is used. ✓ Able to interpret binary code. ✓ Able to use 5-bit binary and convert it to denary values. ✓ Understand what AI is and how it is currently used.			storyboarding, and colour theory.
Subject Vocabulary	Content, Platform, Livestreaming, Mitigate, Policies, Sexting, Grooming, Cyberbullying	Input, Output, Process, Hardware, Software, CPU, GPU, Motherboard, PSU, RAM, ROM, binary, denary. Network, LAN, WAN.	Algorithms, Logical thinking, Instruction, Flow chart, iteration, selection.	Programming, statement, string, integer, float, iteration, loop, variable, sprite, stage.	Text box, shapes, insert, format, link, button, animation, transition, background, foreground,
Subject Texts Used	Online Safety Bill Guardian News Article (Twitter makes more cuts to online safety teams) TikTok Community Guidelines	What is a Network? - beanz Magazine - beanz Magazine - Kids, Code, and Computer Science (kidscodecs.com)	Computational Thinking For Children | Safe Search (safesearchkids.com)	Scratch - About (mit.edu)	Deloitte UK | My life through tech and what it's taught me
Cultural Enrichment Opportunities	Digi Teen Online Conference – Industry and Policing Q and A Opportunity.	YouTube – Building a PC guide	BBC Bitesize - Algorithms	BBC – Microbit BBC Bitesize introduction to programming Youtube/TikTok shorts	Youtube/TikTok shorts
Learning Behaviours	To develop empathy towards others. Respect to people both physically and virtually.	High praise with focus on achievement points and positive postcards towards positive behaviours so students feel encouraged and can model.	We will encourage resilience to errors/mistakes. Model the ability to show its ok and come up with solutions. Develop problem solving skills and "thinking outside the box" to problems.	We will encourage resilience to errors/mistakes. Model the ability to show its ok and come up with solutions. Teach persistence to carry out tasks successfully even with mistakes.	We will encourage resilience to errors/mistakes. Model the ability to show its ok and come up with solutions. Teach persistence to carry out tasks successfully even with mistakes.

		Promote purposeful conversation through guided discussions. We will support pupils to be reflective, responsible and use inference	Develop application of ideas and skills to real world examples.	Develop problem solving skills and creative thinking. Encourage collaboration with classwork and show how it aids for a positive atmosphere.	Nurture persistence to carry out tasks successfully even with mistakes.

Year 8 Curriculum

Learning Focus	Intermediate Computer Science	Computer Architecture	Data Representation	Introduction to Python	Cyber Security
Learning Hours Associated	Week 1-6 6 Hours Approx.	Week 7-12 6 Hours Approx.	Week 13-17 4 Hours Approx.	Week 18-26 8 Hours Approx.	Week 27-39 8 Hours Approx.
What pupils will know, understand and be able to do.	✓ Know the different types of storage: internal/external. ✓ Understand the different types of external/internal media and their uses. ✓ Able to fully justify the choice of storage. ✓ Know the three different network typologies. ✓ Understand the advantages/disadvantages of the different network typologies. ✓ Know what an operating system is. ✓ Understand the role of the operating system. ✓ Able to justify the choice of operating system, for different devices. ✓ Know how to interpret 8-bit binary. ✓ Able to perform binary addition.	✓ Know basic the basic programming concepts (sequencing, selection & iteration) ✓ Understand what algorithms are and how they are used in the real world. ✓ Able to create text/flowchart-based algorithms. ✓ Know how to program psychical devices (MicroBit) ✓ Able to program using block based or text-based languages. ✓ Know how to use sensors, inputs & output for programming.	✓ How computers represent data using binary (0s and 1s). ✓ The difference between binary, denary and hexadecimal. ✓ How text, images and sound are represented digitally. ✓ Key terminology linked to data representation, including bits, bytes, pixels and resolution. ✓ Why computers use binary to store	✓ To know different data types (string, integers, floats). ✓ Know how to create basic messages. ✓ Know how to design custom variables. ✓ Know how to use Python arithmetically (using different operators. + - / * %) ✓ Understanding selection and if statements. Know the two different types of iteration (if and while).	✓ Know of the different methods that attack computers and can compromise user data (malware/hacking/social engineering) ✓ Understand what these attacks look like and how they can be stopped. ✓ Know the main points of the Computer Misuse and Data protection Act ✓ Able to identify breaches in the law surrounding computer misuse, in particular hacking and social engineering ✓ Know how AI is used and the impact it has on existing technology. ✓ Know how digital graphics are used across a variety of media.

	✓ Know the different health & safety risks when using computers. ✓ Understand the risks and be able to offer solutions. ✓ Know the laws involved with health & safety with computers.	✓ Able to evaluate programs using psychical devices. ✓ Know the difference between syntax/logical errors and how to debug them.	and process data. ✓ How binary numbers can be converted into denary. ✓ How image quality is affected by resolution and colour depth. ✓ How sound quality is affected by sample rate and bit depth. ✓ How different types of data are stored and represented by computers.		✓ Know how to set up a new project /canvas. ✓ Know how to use the brush tool effectively. ✓ Know how to use selection tools such as wand, quick selection and lasso. ✓ Understand the use of layers. ✓ Know how to apply different filters effectively. ✓ Know how to customise fonts. ✓ Know how to effectively use different methods of transform. ✓ Understand different principles behind design of digital graphics (layout, colours and purpose). ✓ Know how to use AI to generate images and editing those.
Subject Vocabulary	Storage, internal, external, optical, magnetic, solid state, volatile, non-volatile, Ring, Star & Bus network, server, node, router, ethernet, windows, Linux, MacOSX, iOS, android, kernel, RSI, eye strain.	Programming, MicroBit, Low/High level programming language, sequencing, selection, iteration, algorithm, flowchart, sensors, debugging, syntax/logical errors.		Programming, string, float, integer, selection, iteration, loop, sequence, statement, logic, syntax, debugging, errors.	Social engineering, Hacking, Shouldering, Blagging, Phishing, Malware, Virus, Trojan, Worm, DDos, Data protection, Computer misuse, LAN, WAN, Bus, Ring, Star, Mesh. Server, Router, Hub
Subject Texts Used	UK Health and Safety Legislation	Newsela | Instructional Content Platform – the math behind bits and bytes. Artificial Intelligence For Dummies – A		How to become a software developer: Hannah's story - BBC Bitesize	Newsela | Data of 40 million-plus exposed in latest T-Mobile breach Newsela | TikTok CEO grilled by skeptical lawmakers on safety, content

		Guide For Beginners | liberties.eu			Newsela | TikTok and privacy: Would the popular app give your data to China?
Cultural Enrichment Opportunities	Building computers from the beginning. Extra-Curricular Programming Club.	Programming with MicroBit series. Extra-Curricular Programming Club.	.	Codefinity Mobile app – Learn Python Youtube – kidscancode Extra-Curricular Programming Club	GDPR (Tech news) Amazon - apprenticeships BAE – apprenticeships .
Learning Behaviours	Risk taking and confidence – pupils encouraged to explore software and hardware and learn from mistakes that may be made. To be resilient in attempting the same task using different approaches until a successful outcome is achieved.	Respect of expensive equipment. Supporting peers.		Encouraging resilience to make errors/mistakes and recover from them. Model the ability to show its ok and come up with solutions. Teach persistence to carry out tasks successfully even with mistakes. Develop problem solving skills and creative thinking. Encourage collaboration with classwork and show how it aids for a positive atmosphere.	Promote purposeful conversation through guided discussions.

Year 9 Curriculum

Learning Focus	Business and IT Skills	Further Python	Ethics and AI
Learning Hours Associated	Week 1-14 7 Hours Approx.	Week 15-25 6 Hours Approx.	Week 26-39 7 Hours Approx.
What pupils will know, understand and be able to do.	✓ Know what enterprise is. ✓ To understand what makes an enterprise successful. ✓ To understand the different stages in production. ✓ To know the different scale and sizes of Enterprise. ✓ To know how enterprises can grow. ✓ To understand the competitive environment and its impact on enterprise. ✓ Understand the importance of formatting information within a spreadsheet ✓ Know how to format information within a spreadsheet ✓ Know which formulae to use, for different calculations. ✓ Know how to create different graphs/charts. ✓	✓ Know the different between information/data ✓ Understand how information is captured. ✓ Able to add data into Excel and turn it into information. ✓ Able to justify different formatting choices. ✓ Know how to create conditional formatting. ✓ Understand what formulae is and why it is used in spreadsheets. ✓ Able to justify the choice of graph/chart, based on the information being used.	✓ Know how to properly store/collect the 5 main data types and output them to the screen ✓ Know how to use selection, sequence and iteration to create small 'useful' programs ✓ Understand how to store data to external files and retrieve it ✓ Know how to construct arrays of at least two dimensions. Able to create procedures and functions within a programming environment and distinguish between
Subject Vocabulary	Enterprise Entrepreneur Revenue Profit Primary, Secondary and Tertiary Sector Scale Liability Integration Diversify Data, information, excel, spreadsheet, cell, cell reference, column, row, formatting, formulae, conditional formatting, graph, chart.	Integer, float, boolean, string, character, 2D and 3D lists, selection, sequence and iteration, open(), readlines(), write(), functions, return values, external files, robust coding, permissions	

Subject Texts Used	5 things everyone should know about spreadsheets - Teacher Tech (alicekeeler.com ONS Census report (context and understanding of document, pre-identify complex vocab) Passages from entrepreneur biographies (clip from audio book played as pupils follow text)	Learn to Code - for Free | Codecademy Learn Python - Free Interactive Python Tutorial	
Cultural Enrichment Opportunities	TikTok – Spread Sheet guys, short videos, downloaded. THE PROGRAMME | EPIC Young Entrepreneurs (epicfuture.co.uk)	Game Jam. Young computer scientist competition.	
Learning Behaviours	Logic in creating a formula and functions. Accuracy and Precision in created complex formulas, with multiple variables and nested statements. Strategic Thinking - Beating the competition, growth strategies. Analytical - Pros and Cons of different enterprise characteristics. Innovative - Enterprises that take advantage of local census statistics, Competitive - Planning the development of competitive factors	Teach persistence to carry out tasks successfully even with mistakes. Develop problem solving skills and creative thinking. Encourage collaboration with classwork and show how it aids for a positive atmosphere.	

For Information:

Autumn Term – 15 Weeks (Week 1 – 15)
Spring Term – 11 Weeks (Week 16 – 26)
Summer Term – 13 Weeks (Week 27-39)

Computing Curriculum Time – 2 hours per fortnight (2 Week Timetable)