Computer Science

Birches Head Academy

Part of the **Frank Field Education Trust**

KS3 Curriculum Plan					

Year 7

	LP1	LP2	LP3	LP4	LP5
TOPIC	*Online Safety*		*Excel - Spreadsheet*	*Programming: Scratch*	
Knowledge	In the first 15 weeks of Year 7, this unit of work will offer all year 7 students to be able to identify the dangers they may face online and how to respond to these dangers. They will also learn the consequences of their actions, including online bullying		The spreadsheet unit for Year 7 takes learners from having very little knowledge of spreadsheets to being able to confidently model data with a spreadsheet. This unit will give learners a good set of skills that they can use in computing lessons and in other subject areas such as Maths	The aim of this unit and the following unit is to build learners' confidence and knowledge of the key programming constructs. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration. Once learners have achieved this they will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills. Learners will learn how to create their own subroutines, develop their understanding of decomposition, learn how to create and use lists, and build upon their problem-solving skills by working through a larger project at the end of the unit.	
Procedural Knowledge	Demonstrate skills using specific software and programmes. Demonstrate knowledge and understanding of ICT terminology.				
Key Vocab	Reputation, phishing, malware, disinformation, fake news, influencer, grooming, reputation, hate crime, censorship, pornography, peer pressure		Cell, formatting, conditional formatting, rows, columns, autofill, data, SUM, COUNTA, MAX, MIN, IF, COUNTIF	Blocks, script, sprite, sequence, input, output, process, variables, operators, iteration, debugging, subroutine, decomposition	

Year 8

	LP1	LP2	LP3	LP4	LP5
TOPIC	*Computer Systems*	*Developing for the web*	*Graphics*	*Representation*	*Python*
Knowledge	The aim is to provide a concise overview of how computing systems operate, conveying the essentials and abstracting away the technical details that might confuse or put off learners	In this unit, learners will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML, and CSS, learners will investigate how websites are catalogued and organised for effective retrieval using search engines. By the end of the unit, learners will have a functioning website	This unit offers students the opportunity to design graphics using vector graphic editing software. Vector graphics can be used to design anything from logos and icons to posters, board games, and complex illustrations. Through this unit, students will be able to better understand the processes involved in creating such graphics and will be provided with the knowledge and tools to create their own.	This unit conveys essential knowledge relating to binary representations. The activities gradually introduce learners to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the learners are familiar with.	This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.
Procedural Knowledge	Demonstrate skills using specific software and programmes. Demonstrate knowledge and understanding of ICT terminology.				
Key Vocab	General purpose, sequence, data, purpose built, components, hardware, architecture, operating systems, logical operators, logic circuits, artificial intelligence	HTML, CSS, crawl, hyperlink, static web pages	Vector, paths, path nodes	Binary, conversion, decimal, dinery, sequence, representation, kilo, mega, giga, tera	Algorithms, variables, syntax errors, semantics, relational operations, binary, iteration, Boolean variables

Year 9

	LP1	LP2	LP3	LP4	LP5
TOPIC	*Micro:Bit*	*Spreadsheets*	*Media*		*Databases*
Knowledge	This unit applies and enhances the learners' programming skills in a new engaging context: physical computing, using the BBC micro:bit. 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. In the second half, learners will 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. The Year 8 and 9 programming units are prerequisites for this unit.	In this unit, learners will gain an understanding and knowledge of how to use spreadsheets to store and manipulate data, how to use common functions, and how to extract data to create visual representations using charts. Learners will use spreadsheets to track and calculate income, make predictions, and answer "what if…?" questions. This will build upon learning in year 7 so students will therefore already know how to use cell references, fill colours, and borders, and are familiar with the basic functions, e.g. SUM, AVERAGE, MAX, and MIN.	In this unit, learners will first develop pre-production skills used in the digital media industries. They will learn the importance of understanding the client's requirements, planning, developing timeframes and deadlines, and the techniques involved in these processes. Learners will then progress to learn about a number of the different software tools used within this sector, and learn how to use them to fulfil basic client briefs. Learners will then apply this knowledge and develop their own digital media creation from a set of provided briefs. They will present their creation to the group and assess each other's projects in terms of their effectiveness at meeting the aims of the brief		This unit introduces learners to the world of databases and SQL. Learners explore the key terms used in a database and learn why relational databases are used to eliminate redundancy and inconsistencies that can occur in a flat file database. Next they explore increasingly challenging SQL commands where they retrieve, update and delete data in a relational database.
Procedural Knowledge	Demonstrate skills using specific software and programmes. Demonstrate knowledge and understanding of ICT terminology.				
Key Vocab	Micro:bit, input, output GPIO, testing	Cells, formatting, macros, modelling, charts, data, data validation, Lookup, IF, conditional formatting	Pre-production, raster, vector, open source, artefacts. JPEG, GIF, TIF		Table, record, field, primary key, foreign key, flat file, relational