Computing Curriculum Map

Intent – *what does your curriculum aim to achieve? What knowledge and understanding will students have by the time they leave in Y11? What is the structure and narrative underpinning the curriculum?*

Computing is an exponentially important subject, over the past decade it has become more embedded into society and is continually becoming a requirement for more areas of day to day life. As the world continues to evolve around technology, it's important to equip young people with the understanding and key skills to be able to adapt and thrive in the digital age and future, whichever path they decide to go down.

The Computing curriculum at Conisborough College is developed with the aim of familiarising students with the fundamentals of using Computers from a consumer perspective while encouraging students to delve deeper into the abstracts and intricacies of how Computers work. From Programming to Computational Thinking and AI, students will all be equipped with the skills and understanding needed to pursue Computer Science at KS4. From Year 10 ICT becomes Computer Science with a focus on the abstracts of how Computers work by expanding upon concepts introduced at KS3. By the end of Year 11, students will have developed an understanding of a range of branches of Computing with the skills and knowledge needed to continue their interest at KS5 or even at university.

Implementation -

This curriculum will be delivered using mixed-media resources; PowerPoint slides will be used to teach concepts with Mini-Whiteboard activities embedded to allow checking for understanding at key checkpoints. Do Now questions are focussed on embedding prior knowledge covered in previous lessons into long-term memory with lessons sequenced to build on key topics.

Term	1	2		3	4	5		6
Year 7	**Using the School Network** A basic introduction to using the schools computers and software. This allows students to explore the essential tools used throughout Conisborough. These fundamental skills are used throughout their subjects at Conisborough and provide a foundation for students to familiarise themselves with using Windows and develop their basic IT skills. Hands-on sessions teach students to navigate the school's network and essential software. This foundational knowledge is sequenced early to prepare for future topics and	**Inside the computer** Students learn about what a computer system is, the hardware and software that operate within it. This topic allows students to think of technology as a product instead of just as a tool. Theoretical lessons introduce hardware and software, revisited in Year 8 (CPU) and Year 9 (Binary). Taught early to establish core understanding of	*Assessment*	**Computer Crime -eSafety** Students explore how to use computers safely online with a focus on Social Media and Digital Footprint. By introducing students to the topic of eSafety and Cyber Security in their first year, students will begin to develop their awareness of how to use computers safely, responsibly and productively; a key concern surrounding young people today. Lessons on online safety and digital footprints are taught early due to immediate relevance. Revisits safe computing	**Binary Basics** An introduction to the Computer Science dimension of Computing, students learn how computers use Binary to store data and how it's converted to useable information through Binary conversions. Binary basics allows students to understand how computers store all data, allowing them to link relevant real world contexts such as what their phone storage capacity actually means. Students explore binary data storage	**Scratch – Making a Game** Students are (re)introduced to programming through Scratch (A popular block-based programming language). Split over two weeks, students explore transferrable concepts with the deliverable of a PacMan-style game. Students use Scratch to create a game,	*Assessment*	**Introduction to Programming – Python** Students apply their knowledge of programming from Scratch into a text-based programming language. Python is currently one of the most popular programming languages so by introducing students to the language as early as possible will allow them to develop a strong

	provides necessary digital literacy for all students.	computer systems, preparing for advanced topics and ensuring basic tech literacy.		practices, providing essential knowledge for responsible digital use.	through practical lessons. Revisited in Year 9 with more complex binary arithmetic. Taught early to establish an understanding of data representation for future topics.	applying basic programming concepts. This accessible platform prepares them for Python, building foundational coding skills useful in later studies or problem-solving tasks.		proficiency by the end of KS4 equipping them with a key programming skill if they decide to pursue a career pathway to the industry. Students transition to text-based Python, building on Scratch. Introduced to deepen programming knowledge, essential for future coding challenges or developing problem-solving abilities.
Year 8	**Elements of the Computer** Students learn about the individual tasks of individual computer hardware and components which work together to complete a computer system. Lessons expand on hardware knowledge from Year 7, preparing for the CPU and networks. Taught early in Year 8, ensuring a deeper	**The CPU** Students expand on the elements of the Computer by looking at the function and importance of the CPU. Being able to understand how the CPU works is essential for students to access Computational Thinking (Thinking like a computer) as it abstracts		**Computational Thinking** Students practise Computational techniques of Abstraction, Decomposition and Algorithmic thinking to conceptualise solutions to problems. Computational Thinking is one of the most important and most transferrable skills students can develop in Computing, being able to take	**Python** Using a text-based programming language students create solutions to the conceptual programs they developed in the previous week. This topic will allow students to practice the computational thinking skills they were	**Computer Laws** Students explore Computing from a legislative perspective looking at Data Protection, Computer Misuse and Copyright laws. Lessons on data		**Spreadsheets** Students use Microsoft Excel to manipulate data, create visual representations and explore commonly used spreadsheet functionalities. Practical lessons teach

	understanding of computer systems for future study or practical tech use. **Students understanding of the elements of a computer is further developed in Year 8 as it familiarises students with the physical element of Computing, this content makes up the IT portion of Computing and builds a foundation for the Computer Science topics of how Computers work.**	computer systems as a flowchart of Inputs, Processes and outputs. This will enable them to understand how programs are executed and how computers have evolved. Focuses on the CPU's role in computing, building on earlier hardware lessons. Introduced to support more advanced systems studies, key for those continuing in computing or general tech comprehension.		problems and break them down into smaller, more achievable solutions can be applied to any industry . Introduces problem-solving techniques like abstraction and algorithms, building on programming concepts. Critical for enhancing skills in both computing and broader applications, preparing for more complex programming.	previously introduced to and understand the effectiveness of planning. Further Python lessons expand on Year 7, applying computational thinking to problem-solving tasks. Provides essential programming literacy, preparing for advanced studies while being valuable for all students.	protection, misuse, and copyright laws build on eSafety. Introduced as students' use of technology increases, providing crucial knowledge of digital responsibility and awareness, regardless of future study.		Excel for data manipulation and visualization. Introduced to provide useful real-world digital skills, applicable across subjects, being able to understand and use spreadsheet software effectively is a sought-after skill in many industries.

Year 9	**Graphics – Bitmap and Vector Imaging** Students are introduced to graphics editing software (Inkscape) and the benefits of different image formats (SVG and BMP). Hands-on lessons with graphics software introduce digital imaging skills. Taught to prepare students for multimedia tasks, offering valuable skills for both continuing and non-continuing students.	**Binary Arithmetic** Students recap and develop their understanding of Binary taught at the start of KS3, introducing further skills such as Binary addition, subtraction and 2's complement. Builds on Year 7 binary, introducing operations like binary addition. Reinforces core computational concepts for advanced study or a deeper understanding of how data is processed.		**AI and Ethics** Students take a look at current trends in the Computing industry and evaluate the benefits and disadvantages of its widespread adoption. Discussion-based lessons explore the current and potential societal impacts of AI from positives such as increased productivity in research, to negatives like job redundancy and privacy concerns. Introduced to encourage critical thinking on technology's role in society, relevant for both further study, critical thinking and general digital literacy.	**Networks** Students explore the framework of the Internet and different network layouts, evaluating which is practical in different applications. Practical and theoretical lessons cover network structures, building on prior hardware knowledge. Essential for understanding digital communications, useful for all students.	**HTML** This topic develops students understanding of the WWW and web pages through website creation, programming basic HTML pages. Practical lessons on website creation introduce web development. Prepares students for more advanced web topics or offers basic web literacy for those not continuing with computing. As most companies have some form of online platform, being able to understand how it's constructed		**Databases** Students are introduced to databases using Microsoft Access. Students learn to use Microsoft Access for database management. Building on earlier skills like spreadsheets, this topic helps deepen their understanding of data organization. It provides practical skills valuable for future studies and real-world applications, even for those not continuing with computing after KS3.

						equips students with more advanced Computing skills.		
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Year 10	**Systems Architecture** Students explore the function and components of computer systems, focusing on the CPU and memory. This foundational topic is taught early to prepare for deeper technical understanding later in the course, essential for those pursuing computing further.	**Data Representation** Lessons cover how computers represent data using binary, including text, images, and sound. This builds on KS3 binary concepts, offering necessary knowledge for understanding data processing and future programming tasks.		**Networks** Students learn about different types of networks, protocols, and communication methods. This topic is key for understanding how computers interact globally, providing important insights for both practical IT skills and future studies.	**Network Security** This topic covers threats to networks and how to prevent them, including firewalls and encryption. Taught after networks, it ensures students can understand security issues in real-world contexts, crucial for further computing or general digital safety.	***Programming Fundamentals*** Students develop their coding skills, focusing on key concepts like variables, loops, and functions using a text-based language. Building on KS3 Python, this topic is essential for future programming tasks and problem-solving.		**Programming Project** A hands-on project allows students to apply programming fundamentals to a real-world scenario. This project deepens their practical coding skills, preparing them for future coursework and programming challenges.
Year 11	**Algorithms** Students focus on algorithm design, sorting, and searching techniques. Taught as part of advanced problem-solving, this topic prepares them for coding challenges and computational thinking, both in exams and future study. Students focus on algorithm design, sorting, and searching techniques. Taught as part of advanced problem-solving, this topic prepares them for coding challenges and computational	**Programming** Continued development of programming skills, focusing on more complex challenges. This helps students refine their coding abilities, essential for both exams and further education in computing. Continued development of programming skills, focusing on more complex challenges. This helps students refine their coding abilities, essential for both exams and further education in computing.	***Mock 1***	**Logic and Languages** Students explore logic gates and different programming languages. This builds on earlier concepts of programming, deepening their understanding of how software interacts with hardware, vital for those pursuing computing in the future. Students explore logic gates and different	***Mock 2***	**Impacts of Digital Technology** This topic covers the ethical, environmental, and societal impacts of technology. This topic broadens students' understanding of the real-world implications of computing, allowing them to critically assess	**Revision** Students recap the contents of the course through Exam question practice. This dedicated time allows for focus on answer structure and correction of misconceptions.	

	thinking, both in exams and future study.			programming languages. This builds on earlier concepts, deepening their understanding of how software interacts with hardware, vital for those pursuing computing in the future.		technology and decisions as a whole, ensuring a well-rounded education for all, whether they continue in computing or not.		

Impact:

- *Progress is measured following the school assessment schedule with regular summative assessments to evaluate overall course understanding. Weekly formative assessments are embedded in lessons to allow student familiarity with the exam and assessment structure of the course.*
- *Homework set through Seneca for KS4 students encourages students' extra-curricular engagement and exploration of the subject. Planned trips to Bletchley Park will further apply the subject of Computer Science to real world contexts.*