ORMISTON RIVERS ACADEMY - CURRICULUM MAP

Computer Science	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
KEY TOPIC						
YEAR 7	**Using computers safely, effectively and responsibly: Moviemaker** File Management, Using Email, Cyberbullying, Social Networking – Audience, Assets and Evaluation. Accessibility/Inclusivity	**Computational Thinking:** Decomposition, Pattern Recognition, Abstraction, Algorithms and Flow Charts Bebras Challenge	**Computer Fundamentals:** Elements of a Computer, Hardware/ Software, Fetch, Decode Execute Cycle, Binary and Data representation (characters), Secondary Storage: Different ways data is stored- focus on optical	**Spreadsheets:** Students will learn skills so that they can explain how spreadsheets are used for modelling scenarios in the real world. They will use set up a spreadsheet, enter and analyse data, use simple formulae and functions.	**Graphics:** Students will create graphics using Vectors- Draw basic shapes Manipulate individual objects and groups of objects	**Visual programming:** Microbits- students will learn basic programming skills using online block programming as an introduction to sequencing, selection and iteration program controls
YEAR 8	**Web Design:** Students will use Dreamweaver to produce a fit for purpose website. They will consider the audience accessibility, consistency including Colour Psychology	**Algorithms** Recap on Computational thinking to prepare for the introduction for how search and sort algorithms are used by Processors to search and sort data. Bebras Challenge	**Cyber Security**: Study techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks, social engineering techniques used by cybercriminals. Concentrating on hacking, DDoS attacks, and malware, and prevention Careers covered	**Computer Architecture:** Recap on FDE Cycle, Registers and how data travels within a CPU. Memory: Difference between RAM and ROM. Embedded systems Translators- Interpreters/ compilers. Cloud Storage	**Data Representation:** Recap on characters How data is stored in binary focussing on images and sound This will include compression- lossy and lossless	**Textual Programming:** Introduction into textual programming by way of Python Introducing variables and how they work. Writing a basic program. Debugging programs to ensure fit for purpose
YEAR 9	**HTML:** Write HTML code, create a multi-page website using Dreamweaver/ Google Sites. • Refining the website: the Equality Act 2010. Accessibility/Inclusivity	**Networks:** Studying network types: LAN WAN, PAN and Ad Hoc What the internet is and the World Wide Web. Comparing wireless and wired connections. Encryption Bebras Challenge	**Cyber Security**: Study techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks, social engineering techniques used by cybercriminals. Concentrating on hacking, DDoS attacks, and malware, and prevention Careers covered (2022 only)	**Python Revisited:** Introducing the skill to use a loop to repeat a section of code. Write programs that use lists and counters correctly in conjunction with **for** loops. Acquiring skills to create and call a function or procedure.	**Boolean Logic:** Recap of why data needs to binary form. Acquiring the skill to draw diagrams for the AND, OR and NOT gates. Introducing Truth Tables for AND, OR and NOT gates. Applying to scenarios Use of Python/Scratch	**Databases** How and why, they are used by organisations. Create a database table and adding features to an input form to make it more user-friendly. Concept of validation, organised data- linking to Search and Sorting of Data. Creating Queries
YEAR 10 GCSE Computer Science	**Boolean Logic:** Students will revisit Logic Gates AND OR and NOT- they will Drawing Logic Circuits and Truth Tables for 3rd Level Logic Circuits. Using Logic gates to determine outcome of a written program. Data units Hexadecimal and Binary Conversions	**Data Representation/ Algorithms:** Recap how data is stored in binary, character sets, images and sound and calculate file sizes.	**CPU Architecture:** Recap on registers and learning about what they do, data flow inside the processor, Use of assembly code. Buses and types of architecture	**Networks:** Recap on LAN and WAN, client server and peer 2 peer computer roles. What affects the performance of a network, hardware required for a network, DNS, the cloud, webservers and star and mesh topologies	**Memory/Storage** Recap on Memory and storage, moving onto types of Memory: cache, virtual, RAM, how they work and the effect on the CPU Characteristics of Secondary storage- best use	**Wired and Wireless Networks:** Understanding the different connections and best use. Includes Layers and protocols with students learning how and when certain protocols are used within a network. IP and MAC addressing- why needed
	Programming Skills: Structure, Variables, Program controls, debugging, decomposition, data types					

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YEAR 11 GCSE Computer Science	**Threats to computer systems and networks including prevention:** Learning about different forms of attack such as malware, DOS and data interception. Students will then look at common prevention methods such as firewalls and physical security. Also Covering defensive design to anticipate misuse	**Operating systems, Legal Ethical Issues and Utility Software** Looking at the user interface, memory, user and file management. Learning about Encryption, defragmentation and compression software as utilities. Computer Laws covered, as well as environmental, cultural, ethical issues Computational thinking	**Search and Sort Algorithms:** Recap on previous learning, with added insertion sort and use of practical programming to deepen understanding **IDE:** Tools found in an IDE to aid code development **Languages:** High and low level, uses of translators	**Practical Skills Revision/ Theory Revision:**	**Practical Skills Revision/ Theory Revision:**	
	Programming Skills: Additional programming techniques such as string manipulation, read and write to files, 1 and 2D arrays, SQL, Random number generation and sub functions. Testing					