Curriculum Map – Computer Science Year 10 (2024 – 2025)

	1	2	3	4
Y10	**Topic Title:** Data representation & compression, specific algorithms (and coding) How does a computer represent different types of data & instructions? *(3.3 Fundamentals of data representation)* What can I remember about data representation so far? (Retrieval - binary, units of information, character encoding). How does a computer represent images? *(bitmap images, use of colour and binary representation)* How does a computer represent sound? *(Sound digitization – impact on quality, sample rates)* How does compression work? *(Lossy & lossless compression, Huffman Trees, RLE)* What is the difference between a searching and sorting algorithm? *(3.1 Fundamentals of algorithms)* What is a searching algorithm? *(linear, binary)* What is a sorting algorithm? *(merge, bubble)* How do you represent algorithms?	**Topic Title:** Computer systems - software (and coding) **Big questions:** How does computer software work? *(3.4 Computer systems)* What is the difference between hardware and software? What is Boolean Logic? What is the difference between system software and application software? What is the difference between low-level language and high-level language? What are the three common types of program translators and what is their purpose? *(3.2 Programming)* How do I use more complex code in Python? How do I use different data structures (lists, records, 2D Lists)? How do I use nested selection and nested iteration structures in Python?	**Topic Title:** Computer systems - hardware (and coding) **Big questions:** How does computer hardware work? What is the 'Von Neumann architecture? *(CPU)* What are the different types of memory why are they required? What is the difference between an embedded system and a non-embedded system? *(3.2 Programming)* Can I complete the coding project successfully? How do I make my code robust and secure by using data validation? What is test data and how do I identify and categorise errors?	**Topic Title:** Computer networks (and coding) **Big questions:** What is a computer network and how do you keep it secure? *(3.5 Fundamentals of computer networks)* What is a computer network & what are the advantages & disadvantages? What are the different Network Topologies, advantages and disadvantages? What equipment is needed? What are the advantages and disadvantages of Wired and Wireless networks? *(3.2 Programming)* Consolidation of programming skills through completion of the coding project.

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	What is pseudocode? How can I explain simple algorithms in terms of inputs, processes, outputs? How do I determine the purpose of a simple algorithm? *(creating a trace table from pseudocode)* *(3.2 Programming)* How can I use iteration/repetition in my code? *(use of FOR loops, understand the purpose of a counter, use of WHILE loops).* Know how to use relational operators in Python. Using random. What is selection and how do we code this in Python? *(IF, ELSE and ELIF)*	What is structured programming and subroutines? How do I use subroutines in my code? *(procedures, parameters, creation of menus)*		
ASSESSMENT	**CFU HW Seneca assignment** **CFU itsLearning quiz – specific algorithms1** **CFU (live marking) coding challenges** **Assessment 3.1 Fundamentals of algorithms**	**CFU HW Seneca assignment** **CFU itsLearning quiz – computer systems** **CFU (live marking) coding challenges** **Assessment 3.4 Computer systems (software)**	**CFU HW Seneca assignment** **CFU itsLearning quiz – computer networks** **CFU (live marking) coding challenges** **Assessment 3.4 Computer systems (hardware)**	**CFU HW Seneca assignment** **CFU itsLearning quiz – Cyber security** **Coding project** **Assessment 3.5 Computer networks**