

Curriculum Map – Computer Science Year 10

	1	2	3	4
Y10	<p>Topic Title: Specific algorithms, compression (and coding)</p> <p>Big questions: What is the difference between a searching and sorting algorithm? <i>(3.1 Fundamentals of algorithms)</i> What is a searching algorithm? <i>(linear, binary)</i> What is a sorting algorithm? <i>(merge, bubble)</i></p> <p>How do you represent algorithms? 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? <i>(creating a trace table from pseudocode)</i> How does a computer represent different types of data & instructions? <i>(3.3 Fundamentals of data representation)</i> How does compression work? <i>(Lossy & lossless compression, Huffman Trees)</i></p> <p><i>(3.2 Programming)</i></p>	<p>Topic Title: Computer systems (and coding)</p> <p>Big questions: How does computer software work? <i>(3.4 Computer systems)</i> 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? How does computer hardware work? What is the 'Von Neumann architecture? <i>(CPU)</i> What are the different types of memory why are they required? What is the difference between an embedded system and a non-embedded system?</p> <p><i>(3.2 Programming)</i> How do I write more complex code?</p>	<p>Topic Title: Computer networks (and coding)</p> <p>Big questions: What is a computer network and how do you keep it secure? <i>(3.5 Fundamentals of computer networks)</i> 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? What is a network protocol? What is the need and importance of Network Security? What is the 4 layer TCP/IP model?</p> <p><i>(3.2 Programming)</i> How do I make my code robust and secure? How do I use data validation? What is test data and how do I identify and categorise errors?</p>	<p>Topic Title: Cyber security (and coding)</p> <p>Big questions: What is cyber security and why is it important? <i>(3.6 Cyber security)</i> What are Cyber security threats? What is Social Engineering and how can it be protected against? What is Malicious Code and how can it be protected against? What methods are used for detection and prevention of Cyber security threats?</p> <p><i>(3.2 Programming)</i> Consolidation of programming skills</p>

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	<p>How do I use more complex code in Python? Recap iteration. How do I use different data structures – Lists? How do I use nested selection and nested iteration structures in Python. 2D Lists</p>	<p>How do I use subroutines in my code? <i>(procedures, parameters, creation of menus)</i></p>		
ASSESSMENT	<p>CFU HW Seneca assignment</p> <p>CFU itsLearning quiz – specific algorithms¹</p> <p>CFU (live marking) coding challenges</p> <p>Assessment 3.1 Fundamentals of algorithms</p>	<p>CFU HW Seneca assignment</p> <p>CFU itsLearning quiz – computer systems</p> <p>CFU (live marking) coding challenges</p> <p>Assessment 3.4 Computer systems</p>	<p>CFU HW Seneca assignment</p> <p>CFU itsLearning quiz – computer networks</p> <p>CFU (live marking) coding challenges</p> <p>Assessment 3.5 Computer networks</p>	<p>CFU HW Seneca assignment</p> <p>CFU (live marking) coding challenges</p> <p>CFU itsLearning quiz – cyber security</p> <p>Assessment 3.6 Cyber security</p>