

Year 10 Curriculum Map : Computing

	Autumn	Spring	Summer			
Assessment Objectives	AO1: Demonstrate knowledge and understanding of the key concepts and principles of computer science. AO2: Apply knowledge and understanding of key concepts and principles of computer science. AO3: Analyse problems in computational terms: • to make reasoned judgements • to design, program, evaluate and refine solutions.					
Unit	Topic – Python programming	Topic – Databases and SQL	Topic – Networks and Security			
	Topic – Data representation 1					
Key Learning Outcomes	<ol style="list-style-type: none"> 1. Course and Python intro 2. Data types and operators 3. Arithmetic 4. Inputs and outputs 5. Concatenation 6. String manipulation <i>Knowledge audit test.</i> 7. Selection 8. Boolean operators 9. For loops 10. While loops <i>Knowledge audit test.</i> 11. Validation 12. Authentication 13. Random number generation 14. Self assessment 	<ol style="list-style-type: none"> 1. Lists 2. Lists 3. Lists 4. 2d Lists 5. 2d Lists 6. 2d Lists 7. 2d Lists <i>Knowledge audit test.</i> 8. Dictionaries 9. Dictionaries 10. Functions and procedures 11. Functions and procedures 12. Local and Global variables <i>Knowledge audit test.</i> 13. Reading and Writing files 14. Reading and Writing files. 15. <i>Assessment</i> 	<ol style="list-style-type: none"> 1. Database intro 2. Relational databases 3. Relational databases 4. SQL searches 5. SQL searches 6. SQL searches <i>Knowledge audit test.</i> 7. SQL – Insert 8. SQL – Update 9. SQL - Delete 10. Independent task – Swim challenge 11. Independent task – Swim challenge <i>Knowledge audit test.</i> 12. Independent task – Swim challenge 13. Independent task – Swim challenge <i>Assessment</i> 	<ol style="list-style-type: none"> 1. <i>D.I.R.T lesson</i> 2. What is a network? 3. Wired & Wireless connections 4. Topologies 5. TCP/IP model 6. Protocols 7. Protocols 8. Malware <i>Knowledge audit test.</i> 9. Malware 10. Social Engineering 11. Social Engineering 12. Security threats <i>Knowledge audit test.</i> 13. Security measures 14. Environmental impacts. 15. <i>Assessment</i> 	<ol style="list-style-type: none"> 1. <i>D.I.R.T lesson</i> 2. Storage units 3. Binary Conversions 4. Binary Conversions 5. Binary Conversions 6. Binary Addition <i>Knowledge audit test</i> 7. Binary Multiplication 8. Binary Multiplication 9. Hexadecimal 10. Hexadecimal 11. Hexadecimal 12. Recap and exam skills 13. Recap and exam skills 14. Recap and exam skills **Mock Exams** 	<ol style="list-style-type: none"> 15. Character representation 16. Character representation 17. Image representation 18. Image representation 19. Sound representation 20. Sound representation 21. Compression – RLE <i>Knowledge audit test</i> 22. Compression – RLE 23. Compression – Huffman 24. Compression – Huffman <i>Knowledge audit test</i> 25. Compression – Huffman <i>Assessment</i>
Prior knowledge	<p>KS3: Pupils should be taught to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. Pupils should be taught to use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. Pupils should be taught to understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming. Pupils should be taught to understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]. Pupils should be taught to understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. Pupils should understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.</p>					

	Pupils should undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.		
CEIAG Specific careers links	Link to careers routes: Software developers. Database administrators, SQL Administrators, Management, Cyber security, CPU engineer, Computer Scientist. Topics to be delivered by employers: Programming, SQL, Cyber security. Link to personal skills: problem solving, resilience, creativity, Numeracy, Logical thinking.		
RRSA	Article 16: Right to privacy Article 28: Right to education Article 29: Goals of education	Article 16: Right to privacy Article 28: Right to education Article 29: Goals of education	Article 16: Right to privacy Article 28: Right to education Article 29: Goals of education
Cross curricular links	Maths – Key programming terminology and concepts, programming operators, Collecting, and manipulating data, number systems, binary conversions. Science – Key programming terminology, uses of variables. Displaying pixels using light. DT – Designing for a purpose.		
Useful websites/videos	Convert Binary to Decimal - https://www.youtube.com/watch?v=zQAE4W3IesM&list=PL04uZ7242_M6K0uRmPXwAlb5w9kYOx86c&index=3 Convert Decimal to Binary - https://www.youtube.com/watch?v=M39G3TxoJs0&list=PL04uZ7242_M6K0uRmPXwAlb5w9kYOx86c&index=4 Learn python - https://www.w3schools.com/python/default.asp Learn SQL - https://www.w3schools.com/sql/default.asp		
Wider Reading	Computational fairy tales - https://anyflip.com/xvkk/deuw/basic The Road to Conscious Machines: The Story of AI by Michael Wooldridge; Pelican, 2021		
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW, Review it now, Glossary pages for key terminology. • Sentence Starters • Guided practice/model answers • Immersive reader function in office 365. • Reciprocal reading tasks. 		
Independent Learning Tasks	Knowledge organiser recall questions. Students are asked to complete these to prepare for knowledge audits and assessments. Know it, Think it, Grasp it questions. OneNote catch up tasks. Flipped learning reading tasks.		