



SUBJECT: GCSE Computer Science

Year Group:	Year 11					
Rationale:	In the final year of study, year 11 will develop strong explicit links between the various topics studied. They will develop a deep understanding of the main computer science concepts and theory through the revision of key components. The year 11 curriculum should develop pupil confidence to enable them to independently use a range of computational thinking skills to solve complex programming problems. The final year should give pupils the knowledge and skills required to be successful computer scientist and carry out further advanced study.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
	Topic/Unit: Legislation, Data Representation and logic	Topic/Unit: Programming classification, concepts and algorithms	Topic/Unit: Computer Systems, Networks and Security	Topic/Unit: Robust Programming and Guided Revision	Topic/Unit:	Topic/Unit:
Knowledge	<p>Legislation Pupils will build up their knowledge of the different legislations that are significant in computer science including: The DPA(GDRP), The computer misuse act, Copyright, FIO and open source vs proprietary.</p> <p>Data Representation Prior knowledge of Data representation will be enhanced as pupils practice number base conversions, binary additions, binary shifts, calculating sound and image file sizes and compression techniques.</p> <p>Boolean Logic Drawing and interpreting more complex logic gates. Completing truth tables for logic gates. Applying logical operators in truth tables to solve problems.</p>	<p>Programming Classification Develop theoretical knowledge of the characteristics and purpose of different levels of programming languages: High-level languages and Low-level languages The purpose of translators. The characteristics of a compiler and an interpreter.</p> <p>Programming Concepts Enhance prior knowledge of programming concepts including understanding the key terminology and reading, writing and debugging programs that consist of: sequence, selection, iteration, a range of data types, sub programs, string manipulation, file handing, random number generators and SQL.</p> <p>Algorithms Identification and interpretation of key searching and sorting algorithms. Recap key computational thinking key terminology.</p>	<p>Computer Systems Enhance prior knowledge of computer systems including the components of the CPU, Characteristics that impact it, the components of it and the von Neumann architecture. Develop knowledge of the different types of memory and storage including the similarities and differences. Enhance knowledge of the different types of systems software, the role of the operating, the different types of utility software and how encryption and compression software work</p> <p>Networks Enhance knowledge of the different types of network, the factors that impact performance, the components, topologies, the internet, encryption, protocols, layers and IP and MAC addressing.</p> <p>Security investigate different cyber security issues and how to detect and prevent them including malicious coding and social engineering methods.</p>	<p>Robust Programming Defensive design considerations and maintainability techniques. Identify syntax and logic errors Selecting and using suitable test data: Normal. Boundary, Invalid. Erroneous Revision will then be guided by individual teachers based on QLA. Otherwise revision will follow the order of: data representation, programming concepts, Algorithms, Computer Systems, Networks, Systems Security and finally ethics. Exam technique best practice will be covered throughout the revision sessions.</p>	First Exam Mid May	



<p>Skills</p>	<p>Evaluation skills will be developed as pupils investigate different legislations and apply them to different scenarios.</p> <p>Computational thinking skills be developed as pupils develop understanding of how computers actually work in more depth, understanding how data is stored and interpreted by them.</p> <p>Numeracy skills will be developed as pupils covert between three different number bases using their arithmetic skills and their understanding of powers.</p> <p>Metacognitive practice will be a key component of the computational logic unit.</p>	<p>Programming and problem solving skills will be the focus. As pupils are identifying different code samples and tracing through code analytical skills will be developed in addition to debugging skills which will be developed through identifying and fixing errors in code. As pupils work through a range of challenges they will develop their computational thinking skills and numeracy as they program solutions that use a range of arithmetic.</p> <p>Metacognitive skills will be a large focus as pupils read, interpret and trace through algorithms and solve problems in the most efficient ways us concepts of abstraction and decomposition.</p>	<p>Evaluation skills will be developed as pupils compare and contrast different types of networks and systems architecture components in terms of the positives and negatives. In addition to evaluating the impact of different systems security issues.</p> <p>Literacy skills will be developed as pupils learn how to answer different types of extended answer questions.</p> <p>Communication, debate and oracy skills will be developed through class discussion and debate on the best computer/network components for given scenarios.</p>	<p>Exam technique will develop skills such as time management, abstraction and decomposition skills as pupils develop their knowledge of how to read and interpret exam questions.</p>		
<p>Assess-ments</p>	<p>Formative: Paper 1 Walking Talking Mock examination in class.</p> <p>Formative: Extended answer questions homework.</p> <p>Summative: Data representation on screen test.</p> <p>Formative: End of lessons exam questions.</p>	<p>Mock Examination: Questions from both paper 1 and paper 2. Full examination in formal conditions.</p> <p>Formative: Bi-weekly exam questions homework.</p> <p>Summative: Programming Concepts Exam questions.</p> <p>Formative: End of lessons exam questions.</p>	<p>Formative: Computer Systems exam questions homework.</p> <p>Formative: Bi-weekly exam questions Homework.</p> <p>Summative: Computer Systems topic test.</p> <p>Formative: Computer networks homework exam questions.</p> <p>Summative: Computer Networks on screen test.</p> <p>Formative: End of lessons exam questions.</p>	<p>Paper 2 walking talking mock examination.</p> <p>Formative: Bi-weekly exam questions Homework.</p> <p>Trial Examination: Full paper 1 and full paper 2 sat in formal conditions.</p> <p>Formative: End of lessons exam questions.</p>		



GCSE Computer Science: Curriculum map

YEAR GROUP:	Year 11 – 2021-2022					
<p>Homework</p>	<p>Practice – Pupils given an extended answer question with structure strip to practice exam technique.</p> <p>Extension – Pupils asked to produce a revision resource on the questions they struggled with the most in the walking talking exam paper.</p> <p>Practice and Preparation – Pupils set a Seneca learning assignment on legislation, logic gates and data representation. Pupils need to work through the assignment and answer the supplementary questions.</p>	<p>Preparation and Practice – Pupils given the task to revise for their mock exam. Pupils provided with a revision list.</p> <p>Practice – Pupils given the task to practice their programming using code academy or solo learn.</p> <p>Practice – Pupils given a programming challenge to complete that requires them to use sequence, selection, iteration and an array.</p> <p>Practice and Preparation – Pupils set a Seneca learning assignment on programming theory, programming concepts and algorithms. Pupils need to work through the assignment and answer the supplementary questions</p>	<p>Practice and Preparation – Pupils set a Seneca learning assignment on systems architecture, networking and security. Pupils need to work through the assignment and answer the supplementary exam questions.</p> <p>Preparation and Practice – Pupils given the task to revise for their trial exam. Pupils provided with a revision list.</p> <p>Extension – Pupils asked to use the feedback from their trial exam to produce a series of a revision resources on their weakest topics. This will be personal to each pupil.</p>	<p>Practice and preparation - Pupils given targeted exam questions based on trial performance to help them to prepare for their final exams.</p>		