Year 10 GCSE COMPUTING

Overall Intent:

Students will learn and develop valuable thinking and programming skills that are extremely attractive in the modern workplace. Term two introduces a deep understanding of computational thinking and how to apply it through a chosen programming language. In term three students develop programming skills and complete a small programming project. This teaches the skills of analysis, development, testing and evaluation.

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic/Area of study	SYSTEMS ARCHITECTURE	RAM AND ROM SECONDARY STORAGE	REPRESENTATION OF DATA	LOGIC ALGORITHMS	ALGORITHMS	PROGRAMMING TECHNIQUES
Key learning aims – knowledge and skills	Know what actions occur at each stage of the fetch-execute cycle, the role/purpose of each component and what it manages, stores, or controls during the fetch-execute cycle, the purpose of each register, what it stores (data or address), the difference between storing data and an address, understand each characteristic	Know why computers have primary storage, explain the characteristics of RAM and ROM, know why virtual memory may be needed in a system, understand how virtual memory works, explain the transfer of data between RAM and HDD when RAM is filled.	Learn why data must be stored in binary format, be familiar with data units and moving between each, know that data storage devices have different fixed capacities, conversion of any number in these ranges to another number base (binary, hex, denary), demonstrate an ability to deal with binary numbers	Understand the role of truth tables for each logic gate, recognise the gate symbol, understand how to create, complete and edit logic diagrams and truth tables for given scenarios, demonstrate an ability to work with more than one gate in a logic diagram.	Understand the principles of how to define problems, know the algorithmic symbols and apply them to create an algorithm, understand the main steps of each algorithm, understand any pre-requisites of an algorithm, apply the algorithm to a data set, identify an algorithm if given	Apply the use of variables, constants, operators, inputs, outputs and assignments, demonstrate an understanding of the use of the three basic programming constructs, sequence, selection and iteration (count- and condition-controlled loops), know and apply the common arithmetic operators and the common Boolean

	as listed, the effects of changing any of the common characteristics on system performance, either individually or in combination.		containing between 1 and 8 bits.		the code or pseudocode for it.	operators AND, OR and NOT.
Assessment	Baseline Assessment	Unit test	Unit test	Unit test	Unit test	Year 10 Mock Exam