

Year 10	Autumn 1	Autumn 2	Spring 1	Spring 2		Summer 1	Summer 2
Topic	Topic 1.5 Systems software Topic 1.6 Ethical, legal, cultural and environmental impacts of digital technology	Topic 2.1 Algorithms	Topic 2.2 Programming fundamentals	Year 10 Exam	Topic 2.3 Producing robust programs Boolean logic	Topic 2.4 Boolean logic	Topic 2.5 Programming languages and IDEs
Components	<u>Component 1.5.1 Operating Systems</u> The purpose and functionality of operating systems: - User interface - Memory management and multitasking - Peripheral management and drivers - User management - File management <u>Component 1.5.2 Utility software</u> The purpose and functionality of utility software: - Encryption software - Defragmentation - Data compression <u>Component 1.6.1 Ethical, legal, cultural and environmental impact</u> Impacts of digital technology on wider society including: - Ethical issues - Legal issues - Cultural issues - Environmental issues - Privacy issues	<u>Component 2.1.1 Computational thinking</u> Principles of computational thinking: - Abstraction - Decomposition - Algorithmic thinking <u>Component 2.1.2 Designing, creating and refining algorithms</u> Identify the inputs, processes, and outputs for a problem Structure diagrams Create, interpret, correct, complete, and refine algorithms using: - Pseudocode - Flowcharts - Reference language/high-level programming language - Identify common errors - Trace tables <u>Component 2.1.3 Searching and sorting algorithms</u>	<u>Component 2.2.1 Programming fundamentals</u> The use of variables, constants, operators, inputs, outputs and assignments The use of the three basic programming constructs used to control the flow of a program: - Sequence - Selection - Iteration (count- and condition-controlled loops) The common arithmetic operators The common Boolean operators AND, OR and NOT <u>Component 2.2.2 Data types</u> The use of data types: - Integer - Real - Boolean - Character and string - Casting <u>Component 2.2.2 Data types</u> The use of basic string		<u>Component 2.3.1 Defensive design</u> Defensive design considerations: - Anticipating misuse - Authentication Input validation Maintainability: - Use of sub programs - Naming conventions - Indentation - Commenting <u>Component 2.3.2 Testing</u> The purpose of testing Types of testing: - Iterative - Final/terminal - Identify syntax and logic errors Selecting and using suitable test data: - Normal - Boundary - Invalid/Erroneous - Refining algorithms	<u>Component 2.4.1 Boolean logic</u> Simple logic diagrams using the operators AND, OR and NOT Truth tables Combining Boolean operators using AND, OR and NOT Applying logical operators in truth tables to solve problems	<u>Component 2.5.1 Languages</u> Characteristics and purpose of different levels of programming language: - High-level languages - Low-level languages The purpose of translators The characteristics of a compiler and an interpreter <u>Component 2.5.2 IDE</u> Common tools and facilities available in an Integrated Development Environment (IDE): - Editors - Error diagnostics - Run-time environment - Translators

	Legislation relevant to Computer Science: • The Data Protection Act 2018 • Computer Misuse Act 1990 • Copyright Designs and Patents Act 1988 • Software licenses (open source and proprietary)	Standard searching algorithms: • Binary search • Linear search Standard sorting algorithms: • Bubble sort • Merge sort • Insertion sort	manipulation The use of basic file handling operations: • Open • Read • Write • Close The use of records to store data The use of SQL to search for data The use of arrays (or equivalent) when solving problems, including both one-dimensional (1D) and two-dimensional arrays (2D) How to use sub programs (functions and procedures) to produce structured code Random number generation				
Practical Programming	All students will be given the opportunity to undertake a programming task(s), either to a specification or to solve a problem (or problems), during their course of study. The practical programming assignment does not count towards the final GCSE grade.						
Link with GCSE skills	Paper 01 Mathematics & English	Paper 02 Mathematics & English	Paper 02 Mathematics & English		Paper 02 Mathematics & English		