

Curriculum Map – Year 10 & Year 11 GCSE Computer Science

Curriculum Map Overview

Year 10 Curriculum Map

Autumn Term:	Spring Term:	Summer Term:
Working With Data (Variables & Data Types) - Variables, constants, inputs/outputs - Primitive data types, arithmetic operators, debugging - Problem-solving tasks: My Pet, Split the Pizza Hardware & CPU Architecture - Hardware vs software, input/output devices - CPU components, stored program concept, buses - FDE cycle and address bus calculations Selection & Flowcharts - IF statements, Boolean logic - Flowcharting using algorithms like Driving School & Authentication Embedded Systems - Characteristics, examples, and microcontroller tasks - Embedded vs general-purpose systems Memory & Storage - RAM vs ROM - Optical, magnetic, and solid-state storage - File organisation	Repetition - WHILE, FOR, counters, flags - Random numbers, loop control - Tasks: Guessing Game, Theme Park Ride, Fever Monitor Data Representation - Binary, denary, hexadecimal - Binary addition, overflow - Two's complement - Binary shifts Bitmaps, Sound & Compression - Pixels, resolution, colour depth - ADC, sample rate, fidelity - Lossy vs lossless compression 1D Data Structures - Lists/arrays, indexing, append/delete - Iteration over lists, range()	Operating Systems & Utility Software - File management, scheduling, memory allocation - Compression, backup, recovery, defragmentation Subprograms - Procedures, functions, parameters - Global vs local variables - Math libraries - Creating reusable subroutines - Flowchart symbols, parameters, global/local variables Turtle Programming (Computational Thinking) - Coordinates, polygons, pen colours, fills - Decomposition and abstraction - Combining subprograms for complex graphics Subprograms - Procedures, functions, parameters - Global vs local variables - Math libraries - Creating reusable subroutines - Flowchart symbols, parameters, global/local variables

Year 11 Curriculum Map

Autumn Term	Spring Term	Summer Term
Networks & Internet Technologies • LAN/WAN, routers, MAC & IP addressing • Bandwidth, latency, transmission rates • Wired vs wireless • Wi-Fi, Bluetooth, NFC, RFID • Packet switching, TCP/IP, HTTP/FTP/SMTP Turtle Programming (Computational Thinking) • Coordinates, polygons, pen colours, fills • Decomposition and abstraction • Combining subprograms for complex graphics Computational Thinking • Decomposition and Abstraction • Trace Tables Strings & Validation • Presence, length, range, format checks • String manipulation (index, upper/lower, slicing) • Exception handling Authentication • Username/password systems • Flowchart and algorithm design Ethical, Legal, Cultural & Environmental Issues • E-waste, privacy, identity theft • Data Protection Act, Computer Misuse Act • Intellectual property, copyright, open vs proprietary software •	Types of programming Languages • High and Low level • Translators 1D Data Structures & Searching • Linear search, binary search • Sorting algorithms: bubble, merge 2D Data Structures • Creating and accessing tables/records • Searching rows • Nested iteration Working With Files • Reading, writing, appending • CSV processing • Storing file data into 2D lists Testing • Valid, boundary, erroneous data • Designing test tables Boolean Logic • Truth tables, AND/OR/NOT • Complex expressions AI & Machine Learning • Definitions, applications • Algorithmic bias • Safety and accountability Cybersecurity • Malware types, anti-malware • Social engineering: phishing, pretexting • Penetration testing, firewalls, encryption • IoT security and privacy issues	Exam Preparation • Topic tests • Full mock exam cycles • Revision for Paper 1 and Paper 2 • Final exam practice