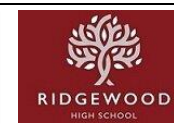


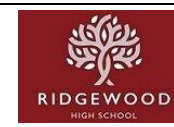
# Curriculum Map

## OCR Computer Science

	Autumn 1 Term	Spring 1 Term	Summer 1 Term
Year 10	<p><b>1.2 Memory and storage</b></p> <ul style="list-style-type: none"> <li>• The purpose of primary storage</li> <li>• RAM and ROM</li> <li>• Virtual Memory</li> <li>• The need for secondary storage</li> <li>• Common types of storage</li> <li>• Suitable storage devices and storage media</li> <li>• The units of data storage</li> </ul> <p><b>Key Assessment:</b> 1.2 End-of-topic test – Part 1</p>	<p><b>1.3 Computer networks, connections and protocols</b></p> <ul style="list-style-type: none"> <li>• Star and mesh network topologies</li> <li>• Modes of connection - wired and wireless</li> <li>• Wireless encryption</li> <li>• The use of IP and MAC addressing</li> <li>• Standards</li> <li>• Common protocols</li> <li>• The concept of layers</li> </ul> <p><b>Key Assessment:</b> 1.3 End-of-topic test – Part 2</p> <p><b>1.4 Network Security</b></p> <ul style="list-style-type: none"> <li>• Forms of attack</li> <li>• Threats posed to networks</li> <li>• Identifying and preventing vulnerabilities</li> </ul> <p><b>Key Assessment:</b> 1.4 End-of-topic test</p>	<p><b>1.1 Systems architecture</b></p> <ul style="list-style-type: none"> <li>• The purpose of the CPU - The fetch-decode-execute cycle</li> <li>• Common CPU components and their functions</li> <li>• Von Neumann architecture</li> <li>• The common characteristics of CPUs</li> <li>• Embedded systems</li> </ul> <p><b>Key Assessment:</b> 1.1 End-of-topic test</p>
	<p><b>Tier 2/3 vocabulary:</b> Primary storage, RAM, ROM, Virtual memory, Secondary storage, Optical storage, Magnetic storage, Solid-state storage, Storage capacity, Storage speed, Storage portability, Storage durability, Storage reliability, Storage cost, Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte, Denary numbers, Binary numbers, Binary arithmetic, Overflow, Hexadecimal, Binary shifts, Character set, ASCII, Unicode, Pixels, Metadata, Colour depth, Resolution, Image quality, Image file size, Sample rate, Sample duration, Sample bit depth, Playback quality, Sound file size, Compression, Lossy compression, Lossless compression</p>	<p><b>Tier 2/3 vocabulary:</b> Malware, Social engineering, Phishing, Brute-force attack, Denial of service attack, Data interception and theft, SQL injection, Penetration testing, Anti-malware software, Firewall, User access level, Password, Physical security, Systems software, Operating system, User interface, Memory management, Multitasking, Peripheral management, Driver, User management, File management, Utility software, Encryption software, Defragmentation software, Data compression software</p>	<p><b>Tier 2/3 vocabulary:</b> CPU, Fetch-execute cycle, ALU, CU, Cache, Register, Von Neumann architecture, MAR, MDR, Program counter, Accumulator, Clock speed, Cache size, Cores, Embedded system</p>



Autumn 2 Term	Spring 2 Term	Summer 2 Term
<p><b>1.2 Memory and storage</b></p> <ul style="list-style-type: none"> <li>• Converting data into binary to be processed by a computer</li> <li>• Data capacity and calculating data capacity requirements</li> <li>• Converting between denary and 8-bit binary</li> <li>• Adding two 8-bit binary integers</li> <li>• Converting between denary and 2-digit hexadecimal</li> <li>• Binary shifts</li> <li>• Representing characters and character sets</li> <li>• Representing images</li> <li>• Representing sound</li> <li>• Compression</li> </ul> <p><b>Key Assessment:</b> 1.2 End-of-topic test - Part 2</p> <p><b>1.3 Computer networks, connections and protocols</b></p> <ul style="list-style-type: none"> <li>• Types of networks</li> <li>• Factors that affect network performance</li> <li>• Client-server and peer-to-peer networks</li> <li>• Hardware used to connect a LAN</li> <li>• The internet</li> </ul> <p><b>Key Assessment:</b> 1.3 End-of-topic test – Part 2</p>	<p><b>1.5 System Software</b></p> <ul style="list-style-type: none"> <li>• The purpose and functionality of operating systems</li> <li>• Operating systems Part 1</li> <li>• Operating systems Part 2</li> <li>• Utility software</li> </ul> <p><b>Key Assessment:</b> 1.5 End-of-topic test</p> <p><b>1.6 Ethical, legal, cultural and environmental concerns</b></p> <ul style="list-style-type: none"> <li>• Investigating and discussing computer science technologies</li> <li>• Privacy issues</li> <li>• Cultural implications of computer science</li> <li>• Environmental impact of computer science</li> <li>• Impacts of digital technology on wider society</li> <li>• Legislation relevant to computer science</li> <li>• Open-source vs proprietary software</li> </ul> <p><b>Key Assessment:</b> 1.6 End-of-topic test</p>	<p><b>Recap</b></p> <p>1.1 Systems architecture 1.2 Memory and storage 1.3 Computer networks, connections and protocols 1.4 Network Security 1.5 System Software 1.6 Ethical, legal, cultural and environmental concerns</p> <p>4 Week Programming Project</p> <p><b>Key Assessment:</b> Year 10 Exam</p>
<p><b>Tier 2/3 vocabulary:</b> LAN, WAN, Client-server network, Peer-to-peer network, Wireless access point, Router, Switch, NIC, Transmission media, the internet, DNS, Hosting, The cloud, Web server, Client, Network topology, Star topology, Mesh topology, Wired connection, Ethernet, Wireless connection, Wi-Fi, Bluetooth, Encryption, IP address, MAC address, Standards, Protocol, TCP/IP, HTTP, HTTPS, FTP, POP, IMAP.</p>	<p><b>Tier 2/3 vocabulary:</b> Ethical issues, Legal issues, Cultural issues, Environmental issues, Privacy issues, The Data Protection Act 2018, Computer Misuse Act 1990, Copyright Designs and Patents Act 1998, Software licences, Open source, Proprietary</p>	<p><b>Tier 2/3 vocabulary:</b> Recap all previous vocabulary</p>



	Autumn Term	Spring Term	Summer 2 Term
Year 11	<p><b>2.1 Algorithms</b></p> <ul style="list-style-type: none"> <li>• Abstraction</li> <li>• Decomposition and structure diagrams</li> <li>• Algorithmic thinking</li> <li>• Linear search</li> <li>• Binary search</li> <li>• Bubble sort</li> <li>• Merge sort and insertion sort</li> <li>• How to produce algorithms</li> <li>• Interpret, correct or complete algorithms</li> <li>• Identifying common errors and suggesting fixes</li> <li>• Trace tables</li> </ul> <p><b>Key Assessment:</b> 2.1 End-of-topic test</p> <p><b>2.2 Programming Fundamentals</b></p> <ul style="list-style-type: none"> <li>• Basic programming constructs</li> <li>• Data types, operators and string manipulation</li> <li>• File handling</li> <li>• Records and SQL</li> <li>• Arrays and sub-problems</li> <li>• Random number generation</li> </ul> <p><b>Key Assessment:</b> 2.2 End-of-topic test</p>	<p><b>2.3 Producing Robust Programs</b></p> <ul style="list-style-type: none"> <li>• Input validation</li> <li>• Defensive design consideration</li> <li>• Maintainability and refining algorithms</li> <li>• Types of testing and errors</li> <li>• Suitable test data</li> </ul> <p><b>Key Assessment:</b> 2.3 End-of-topic test</p> <p><b>2.4 Boolean Logic</b> Simple logic diagrams Applying logic operators and truth tables to solve problems Create, complete or edit logic diagrams and truth tables</p> <p><b>Key Assessment:</b> 2.4 End-of-topic test</p> <p><b>2.5 Programming languages and IDEs</b></p> <ul style="list-style-type: none"> <li>• Characteristics of languages</li> <li>• Low level programming</li> <li>• Compilers and interpreters for translation</li> <li>• IDEs</li> </ul> <p><b>Key Assessment:</b> 2.5 End-of-topic test</p>	<p><b>Exam revision</b></p> <p>1.1 Systems architecture 1.2 Memory and storage – Part 1 1.2 Memory and storage (Part 2) 1.3 Computer networks, connections and 1.4 Computer networks, connections and 1.5 System software 1.6 Ethical, legal, cultural and environmental concerns</p> <p>2.1 Algorithms 2.2 Programming fundamentals 2.3 Producing robust programs 2.4 Boolean logic 2.5 Programming languages and IDEs</p>
	<p><b>Tier 2/3 vocabulary:</b> Computational Thinking, Abstraction, Decomposition, Algorithmic thinking, Problem inputs, Problem processes, Problem outputs, Structure diagram, Pseudocode, Flowchart, Trace table, Searching algorithms, Binary search, Linear search, Sorting algorithm, Bubble sort, Merge sort, Insertion sort, Variable, Constant, Operator, Assignment, Programming construct, Sequence, Selection, Count controlled iteration, Condition controlled iteration, Arithmetic operator, AND, OR, NOT, ==, !=, &lt;, &lt;=, &gt;, &gt;=, +, -, *, /, MOD, DIV, ^, Data type, Integer, Real, Boolean, Character, String, Casting, String manipulation, OPEN, READ, WRITE, CLOSE, Record, SQL, SELECT, FROM, WHERE, Array, Sub program, Procedure, Function, Random number generation</p>	<p><b>Tier 2/3 vocabulary:</b> Defensive design, Anticipating misuse, Authentication, Input validation, Maintainability, Naming conventions, Indentation, Commenting, Testing, Iterative testing, Final/terminal testing, Syntax error, Logical error, Test data, Test data: Normal, Test data: Boundary, Test data: Invalid, Test data: Erroneous, Logic diagram, Logic gate, AND, OR, NOT, Truth table, High-level language, Low-level language, Translator, Compiler, Interpreter, IDE, IDE: Error diagnostics, IDE: Run-time environment</p>	

