YEAR 11 (Computer Science) HALF TERM 3.1

MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: Effective Digital Working Practices	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
LESSON TOPIC QUESTION(S)	**Gap identification and bespoke revision**	**Extended Response skills application**	**Exam paper modelling and Exam paper Practice**	**Bespoke revision topic**	**Retrieval Revision**	**Bespoke Revision topic**
Knowledge & Skills development	**<u>Knowledge – J277/01</u>** *CPU and Architecture* *Embedded Systems* *Primary Memory* *Storage* *Binary Conversion* *Hexadecimal* *File Sizes* *Compression* *Networks* *Encryption* *Forms of attack* *OS* *Utility Software* *Ethical and Environmental Issues*			**<u>Knowledge – J277/02</u>** *Programming Constructs* *Data Handling* *Computational Thinking* *Search Algorithms* *Sort Algorithms* *How to track algorithms* *Testing and Test data* *Logic and Truth tables* *IDEs*		
Assessment / Feedback Opportunities	***Formative Assessment*** Class activity Class Discussion Questioning pupils Verbal Feedback Live Marking *Past papers* *Knowledge checks*					
Key Vocabulary	Variable, Constant, Operator, Assignment, Programming construct, Sequence, Selection, Count controlled iteration, Condition controlled iteration, Arithmetic operator, AND, OR, NOT, ==, !=, <, <=, >, >=, +, -, *, /, 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 , Computational Thinking, Abstraction, Decomposition, Algorithmic thinking, Problem inputs, Problem processes, Problem outputs, Structure diagram, Pseudocode					

	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 CPU, Fetch-execute cycle, ALU, CU, Cache, Register, Von Neumann architecture, MAR, MDR, Program counter, Accumulator, Clock speed, Cache size, Cores, Embedded system 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 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 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, WiFi, Bluetooth, Encryption, IP address, MAC address, Standards, Protocol, TCP/IP, HTTP, HTTPS, FTP, POP, IMAP, SMTP, Protocol layering 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 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
Literacy/Reading opportunities	**Books** The Coming Wave: AI, Power and Our Future The Teenage Guide to Digital Wellbeing **Refactoring UI** **Website for technology news** https://newsforkids.net/category/all_news/science/technology/ https://www.dogonews.com/category/technology
Cross Curricular Themes	Development of digital skills and use of online platforms
Personal Development (Including British Values, RSE, Citizenship)	Respectful communication

Career Opportunities	Network Administrator – Network System Engineer - Network Programmer/Analyst - Network Systems Manager – Cyber Security - Software Engineer – App developer – R&D Python Developer, Data Scientist, Data Analyst, Machine Learning Engineer, Software Engineer, and DevOps Engineer