



KS4 COMPUTER SCIENCE CURRICULUM MILESTONES – OCR J277

Topic 1: Computer Systems

Topic	What Students Will Learn	Assessment
1.1 Systems Architecture	- Understand the purpose and function of the CPU - Explore the Von Neumann architecture: MAR, MDR, Program Counter, Accumulator - Identify and describe common CPU components and their roles - Evaluate how CPU performance is affected by clock speed, cache size, and number of cores - Understand the purpose and characteristics of embedded systems - Develop skills in interpreting exam-style questions on CPU architecture	- Homework with topic questions and retrieval practice - In-class assessment using past paper questions - Teacher-marked with feedback and class reflection
1.2 Memory and Storage	- Differentiate between RAM and ROM and their roles in a system - Understand the need for virtual memory and flash memory - Identify and compare secondary storage types: optical, magnetic, solid state - Evaluate the advantages and disadvantages of each storage type - Select appropriate storage devices for given scenarios - Practice extended response questions comparing storage types	- Homework with topic questions and retrieval practice - In-class assessment using past paper questions - Teacher-marked with feedback and class reflection
1.3 Computer Networks, Connections and Protocols	- Understand the characteristics of LANs and WANs - Identify factors affecting network performance - Compare client-server and peer-to-peer networks - Identify hardware needed to set up a LAN - Understand the role of DNS, hosting, and the cloud - Explore the concept of virtual networks - Develop diagram interpretation and scenario-based reasoning skills	- Homework with topic questions and retrieval practice - In-class assessment using past paper questions - Teacher-marked with feedback and class reflection
1.4 Network Security	- Identify and describe common forms of cyber attack: malware, phishing, brute force, DoS, SQL injection - Understand the concept of social engineering and human vulnerabilities - Evaluate methods to prevent vulnerabilities: firewalls, anti-malware, encryption, user access levels, etc. - Practice identifying threats in case studies and suggesting appropriate countermeasures	- Homework with topic questions and retrieval practice - In-class assessment using past paper questions - Teacher-marked with feedback and class reflection
1.5 Systems Software	- Understand the purpose and functions of operating systems - Explore utility software: encryption, defragmentation, data compression - Compare different types of system software and their roles - Practice short-answer and multiple-choice questions on software functions	- Homework with topic questions and retrieval practice - In-class assessment using past paper questions - Teacher-marked with feedback and class reflection
1.6 Ethical, Legal, Cultural and Environmental Impacts of Digital Technology	- Explore the impact of digital technology on society: ethical, legal, cultural, environmental, and privacy issues - Understand key legislation: Data Protection Act, Computer Misuse Act, Copyright Designs and Patents Act, Creative Commons, Freedom of Information Act - Compare open source and proprietary software - Develop exam technique for extended essay-style questions, including planning, structuring arguments, and evaluating impacts - Practice using case studies to support arguments	- Homework with topic questions and retrieval practice - In-class extended response assessment using past paper questions - Teacher-marked with feedback and class reflection