Ormiston Shelfield Community Academy

OUTCOMES · VALUES · CHOICES

AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2

YEAR 12

Unit 2: Fundamentals of Computer Systems

Computer hardware.
Types of computer system, computer software, data processing.

Computer architecture.
Concepts of microarchitecture, registers.

Data representation.
Number systems, text representation, image representation.

Organising data.
Data structures, indices and matrices, data transmission.

Transmitting data.
Communication channels, compression, error correction.

Logic and data flow.
Boolean logic, flowcharts and system diagrams.

Unit 7: IT Systems Security & Encryption

LA.A. Understand current IT security threats, information security and the legal requirements affecting the security of IT systems.
Threat types, network-based threats, information security, legal requirements, security breaches.

LA.B. Investigate cryptographic techniques and processes used to protect data
Cryptographic principles, cryptographic methods, applications of cryptography.

LA.C. Examine the techniques used to protect an IT system from security threats
Physical security, policies and procedures, software-based protection.

LA.D. Implement strategies to protect an IT system from security threats.
Group policies, anti-malware protection, firewall configuration, wireless security, access control, testing and review.

YEAR 13

Unit 1: Principles of Computer Science

Computational thinking.
Decomposition, pattern recognition, pattern generalisation and abstraction, algorithm design.

Pseudocode.
Interpreting, developing and producing pseudocode, flowcharts.

Programming paradigms.
Handling data, arithmetic operations, built-in functions, validating data, control structures, data structures.

Common algorithms.
Sorting, searching, stacks and queues.

Programming.
Procedural, object-orientated, event driven, coding for the web, translation.

Unit 10: Human-Computer Interaction

LA.A. Examine the factors affecting the development of human-computer interaction
Developments in electronic devices, user development factors, human computer interaction in society, HCI design principles,

LA. B. Investigate the human-computer interaction requirements of an identified client
Requirements for a HCI solution, schematic design documentation.

LA.C. Develop a human-computer interaction solution to meet client requirements.
Preparing for a HCI driven interface, developing HCI solutions,