

KS 1/2 KNOWLEDGE

Variable skills depending on the primary school. Some experience of physical computing and Scratch. Few have basic office skills.

Y7

AUTUMN
How to use technology appropriately and safely when in a school/business environment.

The dangers of technology in the wider world and how to stay safe. Learning personal safety forms the cornerstone of cyber security.

SPRING
Introduction to web development skills using HTML.

Programming techniques with a visual programming environment. Key concepts of sequence, selection and iteration.

SUMMER
Data representation in binary.

Creating an abstract model for a real life purpose.

Arcade game development - recap and application of programming techniques.

KNOWLEDGE TRANSFER

Basic digital literacy
The school system.
Programming techniques.
Binary conversions.
Personal e-Safety.

KNOWLEDGE TRANSFER

Programming principals
Computational thinking.
E-safety / cyber security and hardware.

Y8

SUMMER
Cyber security for organisations. Threat key terms e.g. malware, hacking, firewall, encryption.

Web development techniques including both HTML and CSS.

Computer hardware interactive product.

SPRING
Procedural programming techniques with a text-based language. Sequence, selection, iteration, sub-programs (procedures and functions).

Using programming skills to create a solution that meets a brief.

AUTUMN
Create a digital artefact by adapting and reusing assets.

Computational thinking. Algorithms, flow charts and logical decisions.

Y8

KNOWLEDGE TRANSFER

Programming in multiple languages.
Cyber security GCSE level knowledge.
SQL GCSE level knowledge.

KNOWLEDGE TRANSFER

The majority of learning for Component 1 of the specification.
Excellent, robust programming skills.

Y9

HALF TERM ONE
Components of a PC - a detailed look at building PCs and how the components interact.

Programming skills: recap of previous content plus the introduction of iterative structures.

HALF TERM TWO
Programming skills: recap of previous content plus the introduction of iterative structures.

Software development assignment.

SUMMER
Cyber security unit: brute force attacks, DDoS, SQL injection.

Practical investigation activity in JavaScript.

Database theory using a DBMS and then using SQL. SQL commands and queries.

Y10

SUMMER
Programming unit 3 - data structures, arrays and records.

Network topologies and layers.

Threats to networks, security principals and mitigation methods.

SPRING
Data representation - binary, hex, images, sound, characters.

Programming unit 2 - subprograms, procedures and functions, global and local variables, parameter passing.

Wired and wireless networks, networking equipment, network performance, the internet.

AUTUMN
System architecture - the fetch-decode-execute cycle and registers. Memory technologies. Secondary storage technologies.

Programming unit 1 - sequence, selection and iteration. Exam reference language and flowcharts. Trace tables.

POST 16 PATHWAYS

A Level Computer Science

AUTUMN
Systems software - operating systems, applications vs utilities.

Programming unit 4 - validation routines and robust programming

Algorithms - bubble sort, insertion sort, merge sort, linear search, binary search.

SPRING
Computational logic - logic gates and truth tables

Translators and facilities of languages

SQL commands.

Legal, ethical, cultural and environmental concerns of computer science.

SUMMER
Revision and build up to final examinations in June / July.