

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
Programming techniques with a visual programming environment. Key concepts of procedural programming introduced: sequence, selection, iteration.

Basic logic introduced. Converting from denary to binary and vice versa. Binary addition. How images are stored in a computer system.

SUMMER
Using an abstraction to model a real-life scenario.

Introduction to web development skills using HTML.
Skills to be further explored in an independent project to a given brief.

KNOWLEDGE TRANSFER

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

SUMMER
Cyber security for organisations: malware, social engineering, and ways to mitigate.

Web development techniques using a WYSIWYG.

Learners to create an idea for an independent project and showcase skills learned in school to date.

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
Overview of hardware components and how they interact to form complete computer systems.

The fundamentals of algorithms including computational thinking methods. Common algorithms for searching/sorting.

Y8

KNOWLEDGE TRANSFER

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

AUTUMN
Components of a PC – a detailed look at building PCs and how the components interact.

Web development techniques using HTML and CSS. Programming skills – creating solutions using modular code.

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

Programming skills: string manipulation, data structures, building towards independence.

Game development project in Python.

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

Practical investigation activity in JavaScript.

KNOWLEDGE TRANSFER

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

Y9

SUMMER
Programming project – exam board set brief: pupils to write a software solution to a given set of requirements.

Legal and ethical concerns of computer science.

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

Topologies, protocols and layers, how data is transmitted throughout the world.

AUTUMN
System architecture – the fetch-decode-execute cycle and registers.

Memory technologies.

Secondary storage technologies and their characteristics.

Y10

KNOWLEDGE TRANSFER

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

AUTUMN
Systems software – operating systems, applications vs utilities

Programming techniques – advanced data structures and robust programs
Algorithms – bubble sort, insertion sort, merge sort, linear search, binary search

SPRING
Computational logic – logic gates and truth tables

Translators and facilities of languages
Representation of data – binary and hex conversions, representing text, images and sound.

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

POST 16 PATHWAYS

A Level Computer Science

Y11

