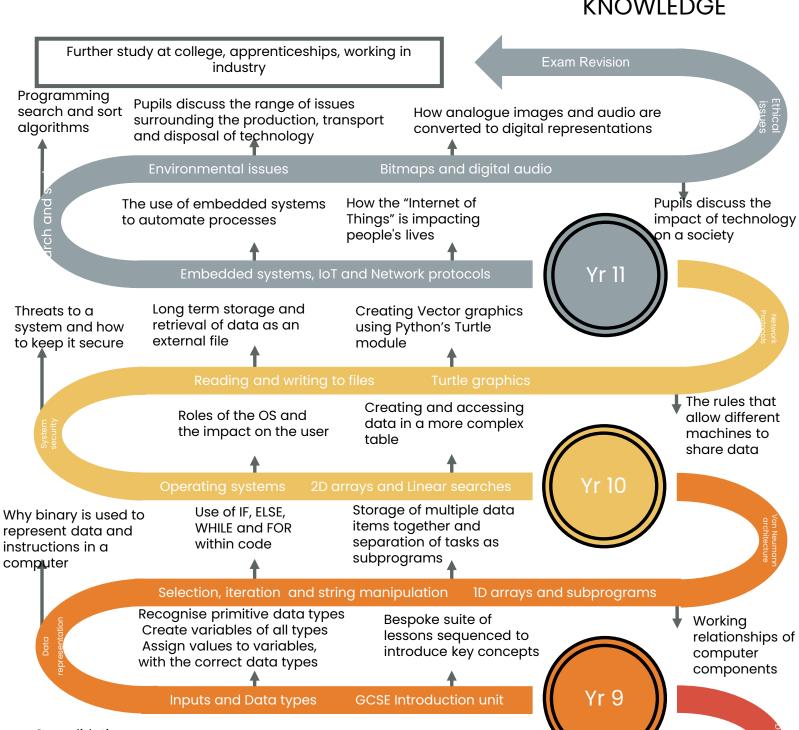# COMPUTING

SPRINGFIELD SCHOOL

SKILLS

Year 11
Pupils create complex programs that make use of sub-programs, iteration, selection as well as reading and writing to files to solve problems.
Pupils can discuss a range of issues surrounding the use of technology

Year 10
Programming becomes more complex and regularly asks pupils to solve problems by using a combination of technique.
Identifying security threats and prevention.

Year 9
Pupils build on their prior work with Python including more complex methods to store and manipulate data. Pupils understanding of how system components work together becomes more specific and complex

Year 8
Programming using Python, understanding Variables, Inputs and outputs of a program. How data, stored as binary, can be used to represent a value, a character, a colour or a sound. Organising data in a meaningful spreadsheet

Year 7
Understanding the components that make a computer, how computers network with each other, how a webpage displays on a screen and how to develop a sequence of instructions to solve a problem

KNOWLEDGE

Further study at college, apprenticeships, working in industry

Exam Revision

Ethical issues

Programming search and sort algorithms

Pupils discuss the range of issues surrounding the production, transport and disposal of technology

How analogue images and audio are converted to digital representations

Environmental issues

Bitmaps and digital audio

The use of embedded systems to automate processes

How the "Internet of Things" is impacting people's lives

Pupils discuss the impact of technology on a society

Embedded systems, IoT and Network protocols

Yr 11

Network Protocols

Threats to a system and how to keep it secure

Long term storage and retrieval of data as an external file

Creating Vector graphics using Python's Turtle module

Reading and writing to files

Turtle graphics

System security

Roles of the OS and the impact on the user

Creating and accessing data in a more complex table

The rules that allow different machines to share data

Operating systems

2D arrays and Linear searches

Yr 10

Von Neumann architecture

Why binary is used to represent data and instructions in a computer

Use of IF, ELSE, WHILE and FOR within code

Storage of multiple data items together and separation of tasks as subprograms

Data representation

Selection, iteration and string manipulation

1D arrays and subprograms

Recognise primitive data types
Create variables of all types
Assign values to variables, with the correct data types

Bespoke suite of lessons sequenced to introduce key concepts

Working relationships of computer components

Inputs and Data types

GCSE Introduction unit

Yr 9

Digital literacy & E-Safety

Consolidation and assessment of Python skills

Using a spreadsheet to organise data and perform calculations

Selecting a range of digital tools to create professional documents

Further Phython Programming

Spreadsheets

Using digital tools to gain support for a cause

Conversion between Denary and binary values, Binary addition, bitmap images

Pupils use a series of interactive tutorials to be familiar with Python

Pupils reflect on their own use of technology and surrounding issues

Binary Bit's n Bobs

Interactive Python tutorials

Yr 8

Digital literacy & E-Safety

Understanding the HTML language to build webpages

Designing programs to reflect real life systems

How individual computers share data and communicate

HTML

Control Systems using Flowol

Networks

Pupils will identify components of a PC and how they work together

Using Rapid Router pupils will create algorithms to solve problems

Pupils reflect on their own use of technology and surrounding issues

Hardware

Algorithms and problem solving

Yr 7