Key Stage 3 Computer Science Program of Study

Year 7

Module	Learning Aims
Computer Basics	- To be able to access resources on the school network - To be able to access Microsoft365 from home - To understand how to store and retrieve files safely and effectively - To develop mouse and keyboard skills
Presenting Information	- To be able to create and develop effective presentations taking into account audience and purpose
E-safety	- To understand the risks and benefits of the online world - How to respect copyright laws - To recognise the signs of cyber abuse and know how to report this - To be able to identify scam emails and websites
Scratch	- To be able to create simple linear programs in Scratch - To be able to recognise the key concepts of sequence, selection, and iterations - To be able to program using variables - To be able to create a program using an IF statement
Spreadsheets	- To be able to explain what spreadsheets are used for - To be able to create simple formulae - To be able to use Functions (inc. SUM, MAX, IF) - To be able to explain modelling - To use a spreadsheet to investigate scenarios - To be able to develop effective charts and graphs

Hardware and Software	- To know the difference between hardware and software - To be able to recognise and describe key hardware components - To know the different storage media - To be able to compare storage media - To be able to explain the function and purpose of RAM and ROM in a computer system

Year 8

Module	Learning Aims
Edublocks	- To develop programming skills - To see the links between block based and text based programming - To create a program taking a user input - To be able to use variables - To be able to explain the key programming constructs - To be able to program using IF, ELIF, ELSE - To be able to create a function
Algorithms	- To be able to explain and use the key Computational Thinking principles (Pattern Recognition, Algorithmic Thinking, Decomposition, and Abstraction) - To be able to create an algorithm for a given task - To know and be able to use Searching Algorithms (Linear and Binary Search) - To be able to trace an algorithm using trace tables
Python 1	- To be able to create simple programs in Python using variables - To be able to use Boolean operators (AND, OR, NOT) in programs - To be able to write programs using sequence, selection, and iteration - To be able to explain the difference between logic and syntax errors - To be able to find and correct errors in programs - To be able to use logic operators (<,>,=)
Data Representation	- To know the key storage units of data (bit to TB) - To be able to calculate storage requirements - To understand why computers use binary

	- To be able to convert numbers between binary and denary and vice versa - To understand the benefits of Hexadecimal - To be able to convert numbers from binary to hexadecimal and vice versa - To be able to convert numbers from denary to hexadecimal and vice versa - To understand how images are stored
Cyber security	- To be able to understand malware and it's effects on a network - To be able to explain social engineering - To be able to describe brute force and DDOS attacks - To know what an SQL injection is and how it is used - To be able to explain how to protect systems and data against cyber attacks

Python Projects	- To increase fluency in Python
	- To be able to independently create solutions to problems using:
	  o Sequence, selection, iteration
	  o Boolean operators
	  o Mathematical operators
	  o User inputs

Year 9

Module	Learning Aims
Logic	- To be able to identify logic gates (AND, OR, NOT) - To be able to read the inputs and outputs of logic gates - To be able to write a logic expression statement from a given logic diagram - To be able to draw a logic circuit from a given logic expression statement - To be able to complete truth tables for logic circuits
User Interfaces	- To be able to identify and describe key types of user interfaces - To be able to suggest where user interface types can be used - To be able to explain what design considerations need to be used when designing interfaces - To understand that different people have different needs for an interface - To be able to identify and explain how interfaces can be made more accessible

	- To be able to plan out a design for a given interface - To be able to explain design considerations used in the designed interface
Automated Systems	- To be able to describe an automated system - To be able to describe benefits and drawbacks to automated systems - To be able to describe a robot and their uses - To be able to explain what AI is - To understand the benefits and drawbacks of AI
Networks	- To be able to describe a network - To be able to identify and compare LANs and WANs - To be able to describe the hardware used in networks - To be able to describe and compare star and mesh topologies - To be able to explain what the Internet is - To be able to identify key network protocols and explain their uses
Data Transmission	- To be able to explain how data is passed around a network - To understand the concept of packet switching - To be able to explain what encryption is and why it is used
Python 2	- To further develop skills and independence in Python - To be able to write programs using string manipulation - To be able to write programs using loops - To be able to trace a looped program
iDEA Award	This is an online award which develops IT, Programming and Entrepreneurship skills. Students will follow a series of online badges to gain certification. All students are expected to complete the Bronze Award.