SUBJECT: Computing

NESTON HIGH SCHOOL

KS1 and 2 Knowledge and Key skills

YEAR 7	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC	*E-Safety, Health & Safety*	*Computers The Basics*	*Programming*	*Data modelling*	*Networks*	*Review and improve*
Knowledge	Understand how to stay e-Safe when using digital technology Able to discuss Cryptography and the development of Computer Systems. How to access a network, develop understanding of Health & Safety conditions.	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.	Able to use the basic concepts of computer programming Design and develop modular programs that use procedures or functions.	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.	Understand how the World Wide Web is part of the Internet, how web addresses are constructed and stored as IP addresses. How Client-server, peer-to-peer networks and the concept of cloud computing function. Explore methods of keeping data secure and how encryption works.	Reviewing topics covered during the academic year to identify areas for further development.
Skills	Developing Basic Office Skills in the use of word processing, desk top publishing skills and multimedia presentation software.	Able to identify hardware and software components, recognise real world input, storage and output devices.	Able to program using drag and drop method to create Loops and Conditional Statements. Can use variables appropriately and can control suitable output	Able to use spreadsheet software to enter a variety of formulas and model 'what if?' scenarios. Able to create a variety of effective charts/graphs.	Able to explain how the WWW works and interacts. Able to explain the benefits and drawbacks of different network types.	Self evaluation, to be able to use teacher feedback effectively to improve skills and understanding.
Key Vocab	**Network, Presentation of work, File Management, Formatting, Tranisitions, Animations E-safety, personal information, privacy and security settings, social media**	**Hardware, Software, Storage, Input, Output, Process**	**Input, Process, Output, Conditional Statements, Loops, JavaScript Blocks, Variables**	**Cell, Columns, Rows, Formulas (Max, Min, Sum, Average, Vlookup) Formatting, Charts, Sort**	**Web, Internet, Networks, Encryption**	**Self evaluation, review, attainment**

Key Knowledge Transfer

YEAR 8	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC	*E-Safety and User Interfaces*	*Understanding Computers*	*Control Systems in Flowol*	*Programming*	*Computational Thinking and Logic*	*Review and improve*
Knowledge	Understand how to stay e-safe and using technology appropriately Understand how user interfaces have developed and how they help humans interact with technology.	Understand how the different elements of a computer interact and function Understand how computers understand binary. Know about the applications of hexadecimal in computing and how convergence and new technology have impacted the computing industry.	Understand how control systems are used in everyday life to make situations more efficient and safer Understand how accurate instructions can be used to program a control system.	Understand how programming languages input instructions to a computer Understand how computer programming is used in society. Understand how computer programming can be used in game design.	Understand how logical thinking, algorithmic thinking, abstraction and decomposition can be used in Computing	Reviewing topics covered during the academic year to identify areas for further development.
Skills	Able to research e-safety advice and present their work in an appropriate format. Able to design and create effective user interfaces. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Be able to explain how binary and hexadecimal are used in computing and successfully convert decimal numbers into both binary and hexdecimal values.	Able to plan a series of instructions with care to create efficient and safe computerised control systems. Able to use loops, sensors, motors and variables to control outputs.	Able to use programming languages to draw shapes, create procedures, input sizes and use variables. Able to use a point scoring system for a game. Able to introduce new levels and challenge to a computer game. Can implement an effective design.	Able to explain how logic gates work, how algorithmic thinking works and how computers use abstraction and decomposition.	Self evaluation, to be able to use teacher feedback effectively to improve skills and understanding.
Key Vocab	**User interfaces, Navigation, Information, Input controls**	**Binary, Hexidecimal, Decimal**	**Algorithm, Flowchart, Problem Solving, Process, Input, Output, Subroutine**	**Procedures, Functions, Variables, Design, Implementation**	**Algorithms, Logic, abstraction and decomposition**	**Self evaluation, review, attainment**

YEAR 9	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC	*E-Safety and Cyber Security*	*Programming in Python*	*Project Work*	*Graphics and Binary*	*Fundamentals of a computer system*	*Review and improve*
Knowledge	Understand how viruses work to affect computers and how to protect computers Understand how data is created and stored, how social engineering works, how hostile scripts can damage files and data and how to prevent data attacks.	Understand how programming languages input instructions to a computer Understand how computer programming is used in society	Understand how various software applications can be used to attain a set goal.	Understand how computer programming is used in society to enhance images, audio and movie files.	Understand how computer systems function, how they are used in real life scenarios and discuss professional standards used in computing.	Reviewing topics covered during the academic year to identify areas for further development.
Skills	Able to research effectively to explain why and how cyber attacks happen and how they can be prevented Know how to spot a scam/virus as well as gain skills in avoiding them or removing them.	Able to effectively program using variables, loops, if, else Able to program accurate calculations and use numbers. Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers	Able to use a variety of software to solve set problems after being hired by a client to calculate their businesses finances and devleop their public branding.	Able to use graphics sotware to combine multiple images into one image using layers and make adjustments using photo editing tools.	Able to evidence and explain how computers operate, the legal and ethical implications of using computers and how computers may develop in the future.	Self evaluation, to be able to use teacher feedback effectively to improve skills and understanding.
Key Vocab	**Data, Cyber-Security, Scripts, Bots**	**Variables, Loops, Programming**	**Planning, Development, Implementation, Brand**	**File type and size, Bitmap, Vector, Storage layers, Cropping, Cutting, Filters**	**Elements and Applications, Standards, Legal and Ethical Implications**	**Self evaluation, review, attainment**