SUBJECT: Computer Science GCSE

NESTON HIGH SCHOOL

KS3 Knowledge and key skills

YEAR 10	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC	*Systems Architecture and Programming Fundamentals*	*Memory and Storage*	*Data Representation and Computer Networks*	*Computer Networks and Computational Thinking*	*Additional Programming Techniques and Boolean Logic*	*Additional Programming Techniques and Boolean Logic*
Knowledge	The purpose and function of the Central Processing Unit (CPU) and the various components that make up a CPU. Understand the basic Python programming fundamentals	The various primary and secondary storage technologies available and the characteristic and roles of these technologies.	Why computers use the binary number system. How to convert between binary and deanery and images and sound are represented in computer systems.	What a computer network and topology is and the devices required to form a network. Understand the importance of using 'problem solving' techniques when solving problems. .	The advanced features of Python programming and how to handle files and SQL searches. To understand how to work out the output of a logic circuit for a given set of inputs.	The advanced features of Python programming and how to handle files and SQL searches. To understand how to work out the output of a logic circuit for a given set of inputs.
Skills	Identify the roles of specialised CPU registers. Developing programming skills by creating a basic Python program	Developing analytical skills by choosing a suitable storage device for a particular scenario.	Developing mathematical skills by performing calculations in Binary and Hexadecimal	Developing critical thinking and problem solving skills by utilising, Abstraction, decomposition and algorithmic thinking.	Mathematical skills to complete truth tables for various logic gates and circuits. Drawing logic circuit diagrams from simple logic expressions. Able to create a Python program using advanced techniques.	Mathematical skills to complete truth tables for various logic gates and circuits. Drawing logic circuit diagrams from simple logic expressions. Able to create a Python program using advanced techniques.
Key Vocab	CPU, Von Neumann, Registers, Python, Data Type	RAM, ROM, Virtual Memory, Magnetic Storage, Optical Storage and Solid State Storage	Bit, Byte, Nibble	LAN, WAN, Abstraction, Decomposition	Search and Sort Algorithms, Logic Gates, Boolean Algebra	Search and Sort Algorithms, Logic Gates, Boolean Algebra

Key Knowledge Transfer

YEAR 11	SUMMER 2	SUMMER 1	SPRING 2	SPRING 1	AUTUMN 2	AUTUMN 1
TOPIC		*Exam Preparation*	*Exam Preparation*	*Program Testing and Designing & Creating Algorithms*	*Computer Science Related Issues and Program Development*	*Network Security and System Software*
Knowledge		How to revise effectively and how to answer exam style questions	How to revise effectively and how to answer exam style questions	The purpose of various testing methods. How to create and read flowcharts To understand how search algorithms work.	The wide range of computer related issues and the implications of legislation on computer use. The various strategies that programmers use to ensure that their programs are robust.	The range of threats to computer systems and the measures to avoid or combat these threats. The purpose and roles of an operating system and Utility Software.
Skills	**Exams**	Able to identify how exam questions are divided into separate Assessment Objectives (AO1 Knowledge and Understanding, AO2 Application, AO3 Analysis and Evaluation) and how command words can assist in an examined test	Able to identify how exam questions are divided into separate Assessment Objectives (AO1 Knowledge and Understanding, AO2 Application, AO3 Analysis and Evaluation) and how command words can assist in an examined test	Explain the importance of a defensive design. To create algorithms representing linear and binary search algorithms	Discuss the positive and negative effects that computing technology has on our privacy, culture, ethics and on the environmental. To design a program using defensive design techniques	Describe a wide range of threats and system security measures. Describe the 5 major roles that an operating system provides. Describe the roles of a variety of utility software.
Key Vocab		Knowledge, Application, Analysis and Evaluation	Knowledge, Application, Analysis and Evaluation	Defensive Design, Testing, Iterative, Black Box, White Box	Ethical, Cultural, Legal, Defensive Design	Network Policies, User Access Levels, Operating System, Kernel, Encryption

20 Hour programming project to be completed. (Not part of final grade)