Year 9

Computer Science

1. E-safety and Social Engineering	• Explain the term E-safety and describe how to remain safe when using the internet • Describe a range of preventative measures we can take to avoid risks online • Define Social Engineering and explain the methods of Phishing, Pharming, Blagging and Shouldering	• Define E-safety and discuss the risks to individuals and organisations at home, school and work • Identify and discuss the pros and cons of a wide range of preventative measures individuals and organisations can take to minimise and avoid risks • Explain the causes of Social Engineering growth and measures individuals and organisations take to reduce and prevent risks	• Discuss a range of behaviours involved in E-safety risks, trolling, cyberbullying, sexting, ID theft • Describe the factors driving the growth of social engineering and the key characteristics used to identify manipulative behaviour online. • Understand and be able to discuss the current legal framework and legislation regarding use of computers online, including GDPR, Misuse of Computers and Copytight
2. Representing Data in Computer Systems	• Identify the input devices involved in converting analogue inputs to digital data • Define binary and be able to convert four digit binary value to denary • Explain how pixels are used to create digital images and create a two bitmap image • Describe the key features of a sound wave	• Explain the term analogue and why computer systems need to use digital data to store and use information and instructions • Be able to convert and add binary values and convert four digit binary values to hexadecimal • Explain how bit depth defines the amount of colour a pixel may represent and calculate the number of colours for a given but depth • Describe how amplitude and frequency affect the characteristics of a sound clip	• Describe how analogue data is converted to digital data and the relationship between this and the architecture of a computer system • Convert binary, hexadecimal and denary values, explaining the relationship between the different number systems • Explain how and why programmers use hexadecimal values to represent data and convert RGB and Binary values to hex. • Explain how sampling frequency and sampling resolution affect the quality of a sound file • Complete simple calculations of digital file sizes
3. Algorithms, decomposition and Abstraction	• Define the term algorithm and provide example of everyday algorithms • Create a simple flow chart algorithm • Define and give examples of the use of abstraction • Explain decomposition and how we can use it to represent systems and organisations	• Explain the use of algorithms in home, school and the business world • Create flowchart algorithms using appropriate shapes for input / output, process and decisions • Use abstraction to describe the general rather than specific details of a system / object • Define and use decomposition to break down a system into its functions	• Explain why algorithms are used to plan solutions to programming / system problems • Use flowcharts and simple pseudocode to set out the sequence of instructions to solve a problem • Understand and explain the relationship in programming between visual, high level, assembly and machine programming • Explain the advantages of using decomposition, functions and subroutines in programming
4. History of Computing, Hardware and Software	• Define a computer system • Describe a key object or device involved in the evolution of modern computers • Explain the term hardware and identify input and output devices • Describe how different types of software are used by computer systems and users of computer systems	• Explain the architecture of a modern computer system • Describe the key objects and individuals involved in the development of modern computers • Describe the difference between internal and external hardware and the role of key components • Explain the difference between system and application software using generic examples	• Explain key events, people and drivers in the development of computer systems from analogue to post Von Neumann Architecture devices • Explain the role and relationship between input, output, process and storage devices • Describe the role of operating systems, utilities, drivers and the their relationship with hardware
5. High Level Programming	• TBC	• TBC	• TBC