Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	1	**Unit Title – Introduction to ICT @ Seahaven** **In this unit students will:** **Know:** •The rules and regulations of working in a specified ICT environment. •Know how to use the different Office 365 applications to enhance their schoolwork and work in a digital fashion. **Understand:** •How to create a strong and safe password and why this is important. •How Office 365 allows collaboration and a wide variety of applications that are commonplace in the working world. **Be able to** •Use research, design and PowerPoint skills to create a factual presentation. •Select and use a range of applications with to their full functionality when completing work in and out of school.	• Competency skills test on the Introduction to ICT @ Seahaven unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Password** - a secret word or phrase that must be used to gain admission to a place • **Office 365** - Microsoft 365 is a product family of productivity software, collaboration and cloud-based services owned by Microsoft. • **Online Safety** - Internet safety, also known as online safety, refers to the processes that reduce the harms to people that are enabled by the (mis)use of information technology.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	1 & 2	**Unit Title – Using Media – Gaining Support for a Cause** **In this unit students will:** **Know** • How to identify the key features of a word processor • Why we evaluate by using formatting techniques to understand why we format documents **Understand:** • How to apply the key features of a word processor to format a document • How to select appropriate images for a given context **Be able to:** • Demonstrate the ability to credit the original source of an image • Apply techniques in order to identify whether or not a source is credible • Select the most appropriate software to use to complete a task	• Competency skills test on the Using Media – Gaining Support for a Cause • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Media Campaign -** A coordinated series of messages through various media channels aimed at promoting a cause or influencing public opinion. • **Advocacy -**The act of supporting or recommending a cause or policy through communication and persuasion. • **Social Media Platforms -** Online tools such as Facebook, Twitter, Instagram, and WhatsApp used to share information and engage audiences. • **Target Audience -** The specific group of people that a media message is intended to reach and influence. • **Messaging -** The key information or slogans communicated to persuade or inform the audience about a cause. • **Visual Media -** Images, videos, infographics, and other visual content used to attract attention and convey messages effectively. • **Digital Literacy -** The ability to find, evaluate, utilize, share, and create content using digital devices and media. • **Call to Action (CTA) -** A statement or prompt encouraging the audience to take a specific step, such as signing a petition or attending an event. • **Media Ethics -** Principles guiding responsible and fair use of media, ensuring truthful and respectful communication. • **Public Awareness -** The level of understanding and consciousness about a particular issue within the community or target audience. • **Viral Content -** Media content that rapidly spreads and gains popularity across social platforms due to its relevance or appeal. • **Feedback -** Responses from the audience that provide insights into the effectiveness of the media campaign. • **Partnerships and Collaboration -** Working with organizations, influencers, or community leaders to amplify the message and gain wider support. • **Media Tools -** Software and platforms used to create, edit, and distribute media content (e.g., Canva, Adobe Spark). • **Evaluation -** The process of assessing the impact and success of a media campaign in achieving its objectives.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	2 & 3	**Unit Title – Modelling data using spreadsheets** **In this unit students will:** **Know:** • Why we use spreadsheets and their importance of them in everyday work life • How to use formatting techniques in a spreadsheet **Understand** • How to identify columns, rows, cells, and cell references in spreadsheet software • How to use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) **Be able to** • Explain the difference between data and information • Explain the difference between primary and secondary sources of data	• Competency skills test on the Modelling data using spreadsheets unit • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Spreadsheet** A digital application used to organize, analyze, and store data in rows and columns, such as Microsoft Excel or Google Sheets. • **Cell** The individual box in a spreadsheet where a row and column intersect, used to enter data. • **Data Entry** The process of inputting data into cells within a spreadsheet. • **Data Modelling** Creating a simplified representation of real-world data to analyze relationships, trends, and patterns. • **Formulas** Mathematical expressions used in cells to perform calculations automatically based on data in other cells. • **Functions** Predefined formulas in spreadsheets (e.g., SUM, AVERAGE, IF) that perform specific calculations or operations. • **Data Validation** A feature that restricts the type of data or the range of data that can be entered into a cell to ensure accuracy. • **Charts and Graphs** Visual representations of data (e.g., bar charts, pie charts, line graphs) used to illustrate trends and comparisons. • **Sorting and Filtering** Organizing data in a specific order or displaying only data that meets certain criteria. • **Pivot Tables** Dynamic tables that summarize, analyze, and rearrange large data sets to extract meaningful insights.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	2 & 3	**Unit Title – Modelling data using spreadsheets** **In this unit students will:** **Know:** • Why we use spreadsheets and their importance of them in everyday work life • How to use formatting techniques in a spreadsheet **Understand** • How to identify columns, rows, cells, and cell references in spreadsheet software • How to use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) **Be able to** • Explain the difference between data and information • Explain the difference between primary and secondary sources of data	• Competency skills test on the Modelling data using spreadsheets unit • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Data Analysis** The process of examining data to find useful information, patterns, or relationships. • **Automation** Using formulas, functions, and macros to perform repetitive tasks automatically within a spreadsheet. • **Cell Referencing** The way cells are identified in formulas, such as absolute (A1) or relative (A1) referencing. • **Data Integrity** Ensuring accuracy and consistency of data within the spreadsheet. • **Scenario Analysis** Using spreadsheet tools to evaluate different possible outcomes based on varying data inputs. • **Data Visualization** The graphical representation of data to make complex information more understandable. • **Spreadsheet Templates** Pre-designed spreadsheet formats that facilitate data entry and analysis for specific purposes. • **Error Checking** Identifying and correcting mistakes in formulas or data entries within a spreadsheet. • **Import/Export Data** The process of bringing data into or sending data out of a spreadsheet from/to other sources or formats. • **Model Validation** Ensuring that the data model accurately represents the real-world scenario it is intended to simulate.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	3 & 4	**Unit Title – Clear messaging in digital media** **In this unit students will:** **Know:** • What features make for a good advertisement • How to use formatting techniques in a PowerPoint **Understand** • How to choose and download a suitable image • How to use tools to copy an image into another application **Be able to** • Choose search terms relating to a particular issue • Create an advertisement plan using a desktop publishing application • Create an advertisement using a desktop publishing application	• Competency skills test on the Clear messaging in digital media unit • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Clear Messaging** Communicating ideas or information in a straightforward, understandable, and effective manner. • **Target Audience** The specific group of people the message is intended to reach and influence. • **Message Clarity** The quality of being easily understood without confusion or ambiguity. • **Content Planning** The process of organizing and preparing message content before publication to ensure clarity and effectiveness. • **Visual Elements** Images, icons, colors, and graphics used to support and clarify the message. • **Conciseness** Delivering information in a brief, to-the-point manner without unnecessary details. • **Language and Tone** The choice of words and the attitude conveyed in the message to suit the audience and purpose. • **Consistency** Maintaining uniformity in style, tone, and messaging across all media to reinforce understanding. • **Call to Action (CTA)** A prompt that encourages the audience to take a specific step, such as clicking a link, signing up, or sharing. • **Audience Engagement** Techniques used to attract and hold the audience's attention, encouraging interaction with the message.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	3 & 4	**Unit Title – Clear messaging in digital media** **In this unit students will:** **Know:** • What features make for a good advertisement • How to use formatting techniques in a PowerPoint **Understand** • How to choose and download a suitable image • How to use tools to copy an image into another application **Be able to** • Choose search terms relating to a particular issue • Create an advertisement plan using a desktop publishing application • Create an advertisement using a desktop publishing application	• Competency skills test on the Clear messaging in digital media unit • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Media Formats** Different types of digital media (text, images, videos, infographics) used to deliver messages effectively. • **Simplicity** Using straightforward language and visuals to avoid confusion and make messages accessible. • **Branding** Incorporating consistent visual and verbal elements to reinforce identity and trust. • **Message Testing** Evaluating how well the message is understood by the target audience before full deployment. • **Feedback** Responses from the audience that provide insights into how the message was received and understood. • **Effective Headlines** Catchy and informative titles or slogans that quickly communicate the main idea. • **Multimedia Integration** Combining different media elements (text, images, videos) to enhance message clarity. • **Avoiding Jargon** Using simple language accessible to the target audience, avoiding technical terms or complex vocabulary. • **Messaging Goals** The specific outcomes or reactions that the message aims to achieve. • **Cultural Sensitivity** Ensuring messages are respectful and appropriate for diverse audiences to prevent misunderstandings.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	4 & 5	**Unit Title - Networks from Semaphores to the Internet** **In this unit students will:** **Know:** • About the history of different communication methods, from Semaphores to the Internet. • What a computer network is and explain how data is transmitted between computers across networks **Understand:** • How data travels between computers across the internet • How services are provided over the internet **Be able to:** • Identify different greeting protocols and use a series of protocol commands • List examples of the hardware necessary for connecting devices to networks • Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections	• Competency skills test on the Networks from Semaphores to the Internet unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Semaphore** An early signaling device using visual signals (flags, lights) to communicate messages over short distances. • **Network** A collection of interconnected computers or devices that share data and resources. • **Communication Protocol** A set of rules that govern data exchange between devices in a network. • **LAN (Local Area Network)** A network that connects computers within a limited area, such as a building or campus. • **WAN (Wide Area Network)** A large-scale network that covers broad geographic areas, such as the Internet. • **Packet Switching** A method of transmitting data by dividing it into small packets that are sent independently over a network and reassembled at the destination. • **Internet** A global network connecting millions of private, public, academic, business, and government networks. • **TCP/IP (Transmission Control Protocol/Internet Protocol)** The fundamental communication protocols used for transmitting data across the Internet. • **Router** A device that directs data packets between different networks, ensuring they reach their destination. • **Switch** A device that connects devices within a LAN and directs data only to the intended recipient.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapping
7	4 & 5	**Unit Title - Networks from Semaphores to the Internet** **In this unit students will:** **Know:** • About the history of different communication methods, from Semaphores to the Internet. • What a computer network is and explain how data is transmitted between computers across networks **Understand:** • How data travels between computers across the internet • How services are provided over the internet **Be able to:** • Identify different greeting protocols and use a series of protocol commands • List examples of the hardware necessary for connecting devices to networks • Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections	• Competency skills test on the Networks from Semaphores to the Internet unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Switch** A device that connects devices within a LAN and directs data only to the intended recipient. • **Bandwidth** The maximum rate of data transfer across a network connection, affecting speed and capacity. • **Network Topology** The physical or logical arrangement of devices in a network (e.g., star, bus, ring). • **Wireless Network** A network that uses radio signals to connect devices without physical cables. • **Encryption** The process of converting data into a coded form to protect confidentiality during transmission. • **Cybersecurity** Measures and practices to protect networks and data from unauthorized access or attacks. • **Evolution of Networks** The progression of communication systems from semaphore signaling to modern high-speed Internet. • **Protocols** Standardized sets of rules for data transmission, such as HTTP, FTP, and SMTP. • **Network Devices** Hardware such as modems, hubs, routers, and firewalls used to create and manage networks. • **Global Connectivity** The ability of networks like the Internet to connect users worldwide, enabling global communication. • **Network Security** Strategies and tools used to safeguard data and ensure secure network operation.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
7	5 & 6	**Introduction to Python Programming** **In this unit students will:** **Know:** • What algorithms and programs are and how they differ • How to describe the semantics of assignment statements **Understand:** • That a program written in a programming language needs to be translated in order to be executed by a machine • How to use binary selection (if, else statements) **Be able to:** • Write simple Python programs that display messages, assign values to variables, and receive keyboard input • Use simple arithmetic expressions in assignment statements to calculate values • Use binary selection (if, else statements) to control the flow of program execution	• Competency skills test on the Introduction to Python Programming unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Python** A high-level, interpreted programming language known for its readability and ease of use. •**Interpreter** A program that executes Python code directly without prior compilation, translating code line-by-line. •**Compiler** A program that translates entire Python source code into machine code before execution (less common for Python but relevant in some contexts). •**Syntax** The set of rules that define the structure of Python code; correct syntax is essential for the code to run. •**Variable** A named storage location in memory used to hold data that can change during program execution. •**Data Types** Classifications of data such as integers, floats, strings, and booleans that determine how data is stored and manipulated. •**String** A sequence of characters enclosed in quotes, used to represent text. •**Integer** A whole number without a fractional part. •**Float** A number with a decimal point, representing real numbers. •**Input() Function** A built-in function used to accept user input during program execution. •**Print() Function** A built-in function used to display output to the console. •**Operators** Symbols used to perform operations on variables and values, such as +, -, *, /, and comparison operators.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
7	5 & 6	**Introduction to Python Programming** **In this unit students will:** **Know:** • What algorithms and programs are and how they differ • How to describe the semantics of assignment statements **Understand:** • That a program written in a programming language needs to be translated in order to be executed by a machine • How to use binary selection (if, else statements) **Be able to:** • Write simple Python programs that display messages, assign values to variables, and receive keyboard input • Use simple arithmetic expressions in assignment statements to calculate values • Use binary selection (if, else statements) to control the flow of program execution	• Competency skills test on the Introduction to Python Programming unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Conditional Statements** Statements like if, elif, and else that perform different actions based on whether a condition is true or false. •**Loops** Repetitive structures such as for and while loops that execute a block of code multiple times. •**Modules** Files containing Python code (functions, variables, classes) that can be imported into other programs to reuse code. •**Libraries** Collections of modules that provide additional functionality, such as math, random, or datetime. •**Error Handling** Techniques such as try and except blocks used to catch and manage errors during program execution. •**Comments** Lines in the code starting with # used to explain or annotate the code for better understanding. •**Algorithm** A step-by-step set of instructions to solve a problem or perform a task. •**Debugging** The process of finding and fixing errors or bugs in the code. •**IDE (Integrated Development Environment)** A software application that provides tools for writing, testing, and debugging code, such as Thonny or IDLE. •**Syntax Error** An error that occurs when the code violates Python's syntax rules, preventing execution. •**Logical Error** An error where the code runs but produces incorrect results due to flawed logic.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	1 & 2	**Media – Vector Graphics** **In this unit students will:** **Know:** • How to use Inkscape software to create vector graphics. • How the importance of reading a design brief can affect a final outcome. • How how z-order determines what is visible Understand: • How to draw basic shapes (rectangle, ellipse, polygon, star) with different properties (fill and stroke, shape-specific attributes) • How to choose a project from real-life design briefs and plan a design Be able to: • Explain how grouping can be used to work with several objects at once • Explain that vector graphics are made up of paths • Develop their own vector graphic based on real-life scenarios that have been developed for differing ability levels. • Combine multiple tools and techniques to create a vector graphic design	• Competency skills test on the Vector Graphics unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Vector** a type of graphical representation using lines to construct the outlines of objects • **Vector graphics** a form of computer graphics in which visual images are created directly from geometric shapes, such as points, lines, curves and polygons. • **Fill** to cause a space to become full of colour or repeated pattern/shape. • **Stroke** a movement of a pen tool to create a line or mark made by this movement. • **Rotate** to turn or cause something to turn in a circle, especially around a fixed point • **Reposition** to move something to a different place or position • **z-order** the order of objects along the Z-axis • **Group** the task of combining a number of objects that are put together to create one singular object. • **Ungroup** the task of uncombining a singular, grouped object to create one multiple, original vector objects. • **Align** to put two or more things into a straight line, or to form a straight line • **Distribute** to spread objects evenly over an area • **Node** a place where things such as lines or systems join • **Open source** software for which the original source code is made freely available and may be redistributed and modified.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	2 & 3	**Layers of computing systems** **In this unit students will:** **Know:** • That a general-purpose computing system is a device for executing programs • That a program is a sequence of instructions that specify operations that are to be performed on data **Understand:** • How the hardware components used in computing systems work together in order to execute programs • What an operating system is, and recall its role in controlling program execution • That since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits **Be able to:** • Explain the difference between a general-purpose computing system and a purpose-built device • Analyse how the hardware components used in computing systems work together in order to execute programs • Use logic gates to construct logic circuits, and associate these with logical operators and expressions	• Competency skills test on the **Layers of computing systems** unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Data Layer** The storage and management of data within a system, including databases, files, and cloud storage. •**Abstraction** The process of hiding complex details behind simpler interfaces to make systems easier to use and understand. •**Hardware-Software Interaction** The way hardware components and software work together to perform computing functions. •**Layers of a System** Different levels of operation within a computing system, from physical hardware to user interfaces, each with specific functions. •**Middleware** Software that acts as a bridge between different systems or layers, facilitating communication and data management. •**Firmware** Specialized software stored in hardware devices (like BIOS) that provides low-level control. •**Cloud Computing** Using remote servers hosted on the Internet to store, manage, and process data instead of local hardware. •**Security Layer** Measures and protocols to protect computing systems and data from unauthorized access or attacks. •**System Architecture** The design and structure of a computing system, including how its layers interact. •**Protocol** A set of rules that govern data exchange between different layers or systems. •**Hardware Components** The physical parts of a computing system, such as CPU, RAM, hard drives, and peripherals.

Curriculum Overview

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8	2 & 3	**Layers of computing systems** **In this unit students will:** **Know:** • That a general-purpose computing system is a device for executing programs • That a program is a sequence of instructions that specify operations that are to be performed on data **Understand:** • How the hardware components used in computing systems work together in order to execute programs • What an operating system is, and recall its role in controlling program execution • That since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits **Be able to:** • Explain the difference between a general-purpose computing system and a purpose-built device • Analyse how the hardware components used in computing systems work together in order to execute programs • Use logic gates to construct logic circuits, and associate these with logical operators and expressions	• Competency skills test on the **Layers of computing systems** unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Computing System** •An integrated set of hardware and software components that work together to perform computing tasks. •**Hardware** •The physical parts of a computer system, such as the CPU, memory, storage devices, and input/output devices. •**Software** •The programs and operating systems that run on hardware and enable users to perform tasks. •**Operating System (OS)** •Software that manages hardware resources and provides a user interface, such as Windows, macOS, or Linux. •**Application Software** •Programs designed to help users perform specific tasks, like word processors or web browsers. •**Hardware Layer** •The physical components of a computing system that perform processing, storage, and input/output functions. •**System Software Layer** •The foundational software, including the OS and utility programs, that operate hardware and provide services for application software. •**User Interface Layer** •The part of the system that allows users to interact with the computer, such as graphical interfaces or command-line interfaces. •**Network Layer** •The infrastructure and protocols that enable communication between different computing systems, such as the Internet.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	3 & 4	**Online Safety** **In this unit students will:** **Know:** • The main safety concerns of being online • What online reputation is and discuss what it is made up of **Understand:** • The terms 'phishing' and 'malware' and the impact they can have • How to identify ways to protect one's data online • The term 'fake news' and discuss the quantity of fake news available online **Be able to:** • Reflect on online activity from a safety perspective • Discuss techniques on how to build a positive online reputation • Discuss ways in which data might be stolen	• Competency skills test on the Online Safety unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Cybersecurity Risks**: Potential dangers such as hacking, malware, or phishing that compromise online safety. • **Privacy Violations**: Unauthorized access or sharing of personal information. • **Cyberbullying**: Use of digital platforms to harass, threaten, or humiliate others. • **Identity Theft**: Stealing personal information to impersonate someone for malicious purposes. • **Digital Footprint**: The trail of data left behind by online actions. • **Safe Browsing Practices**: Strategies such as using secure websites and avoiding suspicious links to stay safe online. • **Online Vigilance**: Being cautious and aware of potential online threats during digital activities. • **Online Reputation**: The perception of an individual or organization based on their digital presence. • **Digital Footprint**: The cumulative record of a person's online activity that contributes to their reputation. • **Reputation Management**: Actions taken to influence or improve one's online image. • **Defamation**: False statements that damage reputation. • **Reputation Shielding**: Techniques like privacy settings and content monitoring to protect one's online image. • **Reputation Repair**: Strategies to mitigate damage after negative online content appears.

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Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	3 & 4	**Online Safety** **In this unit students will:** **Know:** • The main safety concerns of being online • What online reputation is and discuss what it is made up of **Understand:** • The terms 'phishing' and 'malware' and the impact they can have • How to identify ways to protect one's data online • The term 'fake news' and discuss the quantity of fake news available online **Be able to:** • Reflect on online activity from a safety perspective • Discuss techniques on how to build a positive online reputation • Discuss ways in which data might be stolen	• Competency skills test on the Online Safety unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Positive Content Creation**: Sharing helpful, respectful, and authentic online posts. • **Consistent Branding**: Maintaining a professional and coherent online persona. • **Engagement**: Interacting constructively with others online to foster a positive image. • **Phishing**: A cyberattack where attackers deceive individuals into revealing sensitive information through fake emails, websites, or messages. • **Malware**: Malicious software designed to damage, disrupt, or gain unauthorized access to computer systems. • **Encryption**: Securing data by converting it into a code to prevent unauthorized access. • **Strong Passwords**: Creating complex passwords to secure accounts. • **Two-Factor Authentication (2FA)**: An extra layer of security requiring two forms of verification. • **Personal Data**: Information such as name, address, or financial details. • **Sensitive Data**: Confidential information like social security numbers or health records. • **Data Value**: The worth of data to individuals, businesses, or cybercriminals. • **Data Breach**: Unauthorized access and retrieval of sensitive information. • **Hacking**: Exploiting system vulnerabilities to access data illegally. • **Social Engineering**: Manipulating individuals to disclose confidential information.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	4 & 5	**Representations – From clay to silicon** **In this unit students will:** **Know:** • Some different examples of representations • Measure the length of a representation as the number of symbols that it contains **Understand:** • How different representations are appropriate for different tasks • How symbols are carried on physical media • What binary digits (bits) are, in terms of familiar symbols such as digits or letters **Be able to:** • Recall that representations are used to store, communicate, and process information • Recall that characters can be represented as sequences of symbols and list examples of character coding schemes • Measure the size or length of a sequence of bits as the number of binary digits that it contains	• Competency skills test on the Representations – From clay to silicon unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Representation** The way information or data is symbolized or depicted to be processed, stored, or communicated. •**Analog Representation** A continuous form of data representation where information is represented by varying physical quantities, such as voltage or waveforms. •**Digital Representation** A discrete form of data representation using binary digits (bits), typically 0s and 1s, for easier processing and storage. •**Bit (Binary Digit)** The smallest unit of digital data, representing a single binary value: 0 or 1. •**Byte** A group of 8 bits, used as a basic unit of data storage. •**Data Encoding** The process of converting data into a specific format suitable for transmission or storage, such as using binary code. •**Transistor** A semiconductor device used to amplify or switch electronic signals; fundamental building block of modern silicon-based circuits. •**Integrated Circuit (IC)** A compact assembly of electronic components, including transistors, resistors, and capacitors, fabricated on a silicon chip. •**Silicon** A chemical element used as the base material for most semiconductor devices due to its electrical properties. •**Semiconductor** A material whose electrical conductivity can be controlled, used in the manufacturing of transistors and integrated circuits. •**Microprocessor** An integrated circuit that functions as the central processing unit (CPU) of a computer, executing instructions.

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8	4 & 5	**Representations – From clay to silicon** **In this unit students will:** **Know:** • Some different examples of representations • Measure the length of a representation as the number of symbols that it contains **Understand:** • How different representations are appropriate for different tasks • How symbols are carried on physical media • What binary digits (bits) are, in terms of familiar symbols such as digits or letters **Be able to:** • Recall that representations are used to store, communicate, and process information • Recall that characters can be represented as sequences of symbols and list examples of character coding schemes • Measure the size or length of a sequence of bits as the number of binary digits that it contains	• Competency skills test on the Representations – From clay to silicon unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Logic Gates** Basic electronic circuits that perform logical operations (AND, OR, NOT, XOR) on one or more binary inputs to produce a single binary output. •**Digital-to-Analog Converter (DAC)** A device that converts digital data into an analog signal. •**Analog-to-Digital Converter (ADC)** A device that converts an analog signal into a digital form. •**Representation from Clay to Silicon** A metaphorical phrase illustrating the evolution of data representation—from physical, tangible forms (like clay modeling) to highly compact, electronic forms (silicon chips). •**Physical vs. Digital Representation** Physical representations are tangible (like clay sculptures), whereas digital representations are encoded in binary form within electronic systems. •**Storage Media** Physical devices where data is stored, such as hard drives, CDs, or silicon chips. •**Processing** The act of manipulating data within a computer to perform tasks or calculations. •**Simulation** The use of models or representations to imitate real-world systems or processes, often using digital graphics or virtual environments. •**Evolution of Data Representation** The historical progression from manual, physical methods to modern electronic, digital systems for representing information.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
8	5 & 6	**Introduction to Python Programming** **In this unit students will:** **Know:** • What algorithms and programs are and how they differ • How to describe the semantics of assignment statements **Understand:** • That a program written in a programming language needs to be translated in order to be executed by a machine • How to use binary selection (if, else statements) **Be able to:** • Write simple Python programs that display messages, assign values to variables, and receive keyboard input • Use simple arithmetic expressions in assignment statements to calculate values • Use binary selection (if, else statements) to control the flow of program execution	• Competency skills test on the Introduction to Python Programming unit. • Information learnt here will be used as part of the formative End-of-Year ICT assessment	•**Python** A high-level, interpreted programming language known for its readability and ease of use. •**Interpreter** A program that executes Python code directly without prior compilation, translating code line-by-line. •**Compiler** A program that translates entire Python source code into machine code before execution (less common for Python but relevant in some contexts). •**Syntax** The set of rules that define the structure of Python code; correct syntax is essential for the code to run. •**Variable** A named storage location in memory used to hold data that can change during program execution. •**Data Types** Classifications of data such as integers, floats, strings, and booleans that determine how data is stored and manipulated. •**String** A sequence of characters enclosed in quotes, used to represent text. •**Integer** A whole number without a fractional part. •**Float** A number with a decimal point, representing real numbers. •**Input() Function** A built-in function used to accept user input during program execution. •**Print() Function** A built-in function used to display output to the console. •**Operators** Symbols used to perform operations on variables and values, such as +, -, *, /, and comparison operators.

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Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
9	1 & 2	**Online Safety** **In this unit students will:** **Know** • **H**ow data is collected on and how it is used • What data created online is valuable, and to whom • How to report illegal online content • **How** we decide what content should be illegal **Understand** • By investigating the stakeholders who use big data and why • Ways in which data might be stolen • Why some content online can be potentially harmful **Be able to** • Explain how data is collected on and how it is used • Identify ways to protect one's data online • Describe the UK laws governing online content • Contemplate the potential harms of being online	• Competency skills test on the Online Safety unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Cybersecurity Risks**: Potential dangers such as hacking, malware, or phishing that compromise online safety. • **Privacy Violations**: Unauthorized access or sharing of personal information. • **Cyberbullying**: Use of digital platforms to harass, threaten, or humiliate others. • **Identity Theft**: Stealing personal information to impersonate someone for malicious purposes. • **Digital Footprint**: The trail of data left behind by online actions. • **Safe Browsing Practices**: Strategies such as using secure websites and avoiding suspicious links to stay safe online. • **Online Vigilance**: Being cautious and aware of potential online threats during digital activities. • **Online Reputation**: The perception of an individual or organization based on their digital presence. • **Digital Footprint**: The cumulative record of a person's online activity that contributes to their reputation. • **Reputation Management**: Actions taken to influence or improve one's online image. • **Defamation**: False statements that damage reputation. • **Reputation Shielding**: Techniques like privacy settings and content monitoring to protect one's online image. • **Reputation Repair**: Strategies to mitigate damage after negative online content appears.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
9	1 & 2	**Online Safety** **In this unit students will:** **Know** • **H**ow data is collected on and how it is used • What data created online is valuable, and to whom • How to report illegal online content • **How** we decide what content should be illegal **Understand** • By investigating the stakeholders who use big data and why • Ways in which data might be stolen • Why some content online can be potentially harmful **Be able to** • Explain how data is collected on and how it is used • Identify ways to protect one's data online • Describe the UK laws governing online content • Contemplate the potential harms of being online	• Competency skills test on the Online Safety unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Positive Content Creation**: Sharing helpful, respectful, and authentic online posts. • **Consistent Branding**: Maintaining a professional and coherent online persona. • **Engagement**: Interacting constructively with others online to foster a positive image. • **Phishing**: A cyberattack where attackers deceive individuals into revealing sensitive information through fake emails, websites, or messages. • **Malware**: Malicious software designed to damage, disrupt, or gain unauthorized access to computer systems. • **Encryption**: Securing data by converting it into a code to prevent unauthorized access. • **Strong Passwords**: Creating complex passwords to secure accounts. • **Two-Factor Authentication (2FA)**: An extra layer of security requiring two forms of verification. • **Personal Data**: Information such as name, address, or financial details. • **Sensitive Data**: Confidential information like social security numbers or health records. • **Data Value**: The worth of data to individuals, businesses, or cybercriminals. • **Data Breach**: Unauthorized access and retrieval of sensitive information. • **Hacking**: Exploiting system vulnerabilities to access data illegally. • **Social Engineering**: Manipulating individuals to disclose confidential information.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
9	3 & 4	**Representations – going audiovisual** **In this unit students will:** **Know** • How an image can be represented as a sequence of bits • How colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity • How sounds are represented as sequences of bits **Understand** • The function of microphones and speakers as components that capture and generate sound • The trade-off between representation size and perceived quality for digital images **Be able to** • Describe how digital images are composed of individual elements • Describe how an image can be represented as a sequence of bits • Define 'compression', and describe why it is necessary • Recall that sound is a wave	• Competency skills test on the Representations – going audiovisual unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Representation** The process of visually or audibly depicting ideas, objects, or data to communicate information effectively. • **Audiovisual Representation** The use of both sound and visual elements to represent information, such as videos, animations, or multimedia presentations. • **Audio Representation** The depiction of sound data, including music, speech, or sound effects, in digital or physical form. • **Visual Representation** The depiction of information through images, graphics, animations, or videos. • **Multimedia** Content that combines different forms of media, such as text, images, audio, and video, to enhance communication. • **Animation** The process of creating the illusion of movement by displaying a sequence of images or frames. • **Sound Wave** A visual or digital depiction of sound, illustrating variations in pressure that produce sound. • **Video** A sequence of visual images combined with audio that represents moving images or scenes. • **Digital Audio** Sound that has been converted into digital data for storage, editing, and playback on electronic devices. • **Visual Effects** Techniques used to enhance or alter visual content to improve or create specific effects in multimedia.

Curriculum Overview

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9	3 & 4	**Representations – going audiovisual** **In this unit students will:** **Know** • How an image can be represented as a sequence of bits • How colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity • How sounds are represented as sequences of bits **Understand** • The function of microphones and speakers as components that capture and generate sound • The trade-off between representation size and perceived quality for digital images **Be able to** • Describe how digital images are composed of individual elements • Describe how an image can be represented as a sequence of bits • Define 'compression', and describe why it is necessary • Recall that sound is a wave	• Competency skills test on the Representations – going audiovisual unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Voice Synthesis** The artificial production of human speech through computer-generated sounds. • **Sound Editing** The process of manipulating audio recordings to improve quality or create desired effects. • **Visual Data** Information represented visually, such as graphs, charts, or images, to simplify understanding. • **Audiovisual Media** Media that combines sound and visual elements, used in education, entertainment, and communication. • **Representation in Multimedia** The method of encoding information through combined visual and auditory data to enhance understanding and engagement.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
9	5 & 6	**Introduction to Cybersecurity** **In this unit students will:** **Know** • What happens to data entered online • How a DDoS attack can impact users of online services • How human errors pose security risks to data **Understand** • By explaining the difference between data and information • By explaining the need for the Computer Misuse Act • By questioning how malicious bots can have an impact on societal issues **Be able to** • Recognise how human errors pose security risks to data • Compare security threats against probability and the potential impact to organisations • Identify the most effective methods to prevent cyberattacks	• Competency skills test on the Clear messaging in digital media unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Cybersecurity** The practice of protecting computers, networks, and digital data from unauthorized access, attacks, damage, or theft. • **Threat** Any potential danger that could exploit vulnerabilities to cause harm to digital systems or data. • **Vulnerability** A weakness or flaw in a system that can be exploited by threats to gain unauthorized access or cause damage. • **Malware** Malicious software designed to harm, disrupt, or gain unauthorized access to computer systems. • **Phishing** A cyberattack method where attackers trick individuals into revealing sensitive information through fake emails or websites. • **Firewall** A security system that monitors and controls incoming and outgoing network traffic based on predefined security rules. • **Encryption** The process of converting data into a coded form to prevent unauthorized access during storage or transmission. • **Authentication** The process of verifying a user's identity before granting access to systems or data. • **Password Security** The practice of creating and managing strong, unique passwords to protect accounts from unauthorized access. • **Cyberattack** An attempt by hackers or malicious actors to damage, disrupt, or gain unauthorized access to digital systems.

Curriculum Overview

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9	5 & 6	**Introduction to Cybersecurity**
		In this unit students will:
		
		Know
		• What happens to data entered online
		• How a DDoS attack can impact users of online services
		• How human errors pose security risks to data
		
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		• By explaining the difference between data and information
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		Be able to
		• Recognise how human errors pose security risks to data
		• Compare security threats against probability and the potential impact to organisations
		• Identify the most effective methods to prevent cyberattacks
			• Competency skills test on the Clear messaging in digital media unit.
			
			• Information learnt here will be used as part of the formative mid-year ICT assessment
			
			• Information learnt here will be used as part of the formative End-of-Year ICT assessment
				• **Data Breach**
				  • An incident where sensitive data is accessed, stolen, or exposed without authorization.
				• **Social Engineering**
				  • Manipulative tactics used by attackers to trick individuals into revealing confidential information.
				• **Security Policy**
				  • A set of rules and procedures designed to protect an organization's information assets.
				• **Antivirus Software**
				  • Programs designed to detect, prevent, and remove malware from computers and networks.
				• **Cyber Hygiene**
				  • Best practices and habits for maintaining the security and health of digital systems and data.

Curriculum Overview

Year Group	Term	Unit of Work	Assessment Content	Vocabulary Mapper
9	5 & 6	**Data Science** **In this unit students will:** **Know** • Where large data sets are used in daily life • How to use findings to support arguments for or against a prediction **Understand** • By identifying the steps of the investigative cycle • How to use findings to support a recommendation • How to draw conclusions and report findings **Be able to** • Select criteria and use data set to investigate predictions • Solve a problem by implementing steps of the investigative cycle on a data set • Visualise a data set • Analyse visualisations to identify patterns, trends, and outliers	• Competency skills test on the Data Science unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Data Science** An interdisciplinary field that involves analyzing, interpreting, and extracting insights from large sets of data using various techniques and tools. • **Data** Raw facts and figures that can be processed or analyzed to gain information. • **Big Data** Extremely large and complex datasets that require advanced tools and techniques to store, analyze, and interpret. • **Data Mining** The process of discovering patterns, correlations, or useful information from large datasets through analysis. • **Machine Learning** A subset of artificial intelligence that enables computers to learn from data and improve performance on tasks without being explicitly programmed. • **Artificial Intelligence (AI)** The simulation of human intelligence processes by machines, especially computer systems, to perform tasks like learning and problem-solving. • **Data Analysis** The process of examining, cleaning, and modeling data to discover useful information, draw conclusions, and support decision-making. • **Data Visualization** The graphical representation of data to help understand complex information through charts, graphs, and plots.

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9	5 & 6	**Data Science** **In this unit students will:** **Know** • Where large data sets are used in daily life • How to use findings to support arguments for or against a prediction **Understand** • By identifying the steps of the investigative cycle • How to use findings to support a recommendation • How to draw conclusions and report findings **Be able to** • Select criteria and use data set to investigate predictions • Solve a problem by implementing steps of the investigative cycle on a data set • Visualise a data set • Analyse visualisations to identify patterns, trends, and outliers	• Competency skills test on the Data Science unit. • Information learnt here will be used as part of the formative mid-year ICT assessment • Information learnt here will be used as part of the formative End-of-Year ICT assessment	• **Algorithms** Step-by-step computational procedures used for data processing and problem-solving in data science. • **Statistics** The branch of mathematics dealing with data collection, analysis, interpretation, and presentation. • **Data Cleaning** The process of identifying and correcting errors or inconsistencies in data to improve its quality. • **Predictive Modeling** Techniques that use historical data to make predictions about future events or trends. • **Data Warehouse** A centralized repository that stores large volumes of structured data for analysis and reporting. • **Data Set** A collection of related data points or records used for analysis. • **Data Scientist** A professional who uses statistical, analytical, and programming skills to extract insights from data.