ICT and Computer Science Department

Academic year 2023 - 2024

KING EDWARD VI HANDSWORTH WOOD GIRLS' ACADEMY

KEVI HWGA Curriculum Map

Curriculum Purpose:		
Context	Beyond KEVI HWGA:	The Computing/ICT curriculum delivered at KEVI HWGA will prepare learners for further and higher education courses in IT and Computer Science. Equally, the skills developed through following this curriculum will allow learners to access a range of courses in other disciplines that require sound IT skills. Computing could lead to a wide range of career opportunities such as: Software Engineering, Games Designer, Web Developer, Website Designer, Cyber Security Analyst, Hardware Engineer to name a few. It is thought that that there are a plethora of jobs in Computer Science that don't even exist yet!
	Intent Statement	Computer Science/ICT department must equip our students with the knowledge, skills and understanding to be able to take advantage of future technological developments. We aspire to enrich students with a varied and deep understanding of computing developments, concepts and the impact of technology on society and environment. Students learn a diverse range of practical skills and study the theory behind the science of computing, the Internet and the ever-growing importance of our personal security and privacy.
	KS5	KS5 students will have the opportunity to take up **BTEC L3 Extended Certificate in IT**. The course build on the routes available at KS4 and can support learners in preparing them for apprenticeships or higher education in computing or IT related disciplines. **BTEC Level 3 Extended Certificate in IT** The Pearson BTEC Level 3 National Extended Certificate in Information Technology is intended as an Applied General qualification covering 360 GLH and equivalent in size to one A Level. It is designed for learners who are interested in an introduction to the study of creating IT systems to manage and share information alongside other fields of study, with a view to progressing to a wide range of higher education courses, not necessarily in IT. Learners will develop a common core of IT knowledge and study areas such as the relationship between hardware and software that form an IT system, managing and processing data to support business and using IT to communicate and share information. The objective of this qualification is to give learners the opportunity to develop their knowledge and skills in IT systems, systems management and social media in business. This will enable learners to progress to further study in the IT sector or other sectors. Learners will study three mandatory units:

		• Unit 1: Information Technology Systems (synoptic) • Unit 2: Creating Systems to Manage Information • Unit 3: Using Social Media in Business • Unit 6: Website Development.
	KS4	There are two routes that students can follow at KS4: **OCR Computer Science (J277)** and **BTEC Level 2 Tech Award in Digital Information Technology (DIT).** **OCR's GCSE (9–1) in Computer Science** Computer Science will encourage students to: • understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation • analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs • think creatively, innovatively, analytically, logically and critically • understand the components that make up digital systems, and how they communicate with one another and with other systems • understand the impacts of digital technology to the individual and to wider society • apply mathematical skills relevant to Computer Science. **BTEC Level 2 Tech Award in Digital Information Technology (DIT)** The Award gives learners the opportunity to develop sector-specific knowledge and skills in a practical learning environment. The focus is on four areas of equal importance, which cover the: • development of key skills that prove your aptitude in digital information technology, such as project planning, designing and creating user interfaces, creating dashboards to present and interpret data • process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct • attitudes that are considered most important in digital information technology, including personal management and communication • knowledge that underpins effective use of skills, process and attitudes in the sector such as how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security and legal and ethical issues. Both routes give students the opportunity to apply their learning from KS3. We have further refined our KS3 curriculum, so that our students are better prepared to tackle BTEC L2 DIT or GCSE Computer Science pathway.

	KS3	Following on from our 2022-2023 evaluation, we have decided to make some important elements to our KS3 curriculum. At KS3 students will cover the breadth and depth of the skills, knowledge and understanding required to progress on to a KS4 course in Computing or DIT. Computational thinking and key computing concepts will form the basis of all projects, whilst key IT skills are delivered as part of the projects. Our KS3 curriculum is carefully designed, so that we are fully preparing our KS3 students to either take Computer Science or vocational ICT route. KS3 curriculum therefore covers both elements of Computer Science and IT units which are carefully designed to ensure students are build Computer Science foundation and practically apply skills using technologies responsibly. Our Computer Science curriculum is both fun and stretching, covering aspects of computer science, digital literacy and creativity. The areas of study offer students broad experiences within the subject area. Over the course of Key Stage 3, students will have experienced and studied many different areas of Computer Science and IT. Students study Computer Science for 1 period a week in Years 7, 8 and 9. The following units will be covered at KS3: **Year 7** Autumn Half Term 1 Use of technology, platforms *Are students responsible, competent, confident, and creative users of information and communication technology?* Autumn Half Term 2 E-Safety and using technology responsibly *Can students understand the importance of being safe online and know what actions they need to take in order to remain safe and have the confidence to report.* Spring Half Term 1 Control using Flowol *Can students understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and control* Spring Half Term 2 Data Representation *Can students understand and apply the fundamental principles and concepts of computer science, including use of a high level programming language* *Can students understand why all data is represented in binary in a computer* *Can students evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems?* Summer Half Term 1 Multimedia

		Can students follow a systems life cycle and create a 'multimedia' presentation on a given topic. Students to follow a logical approach to the development of a multimedia presentation. Summer Half Term 2 Introduction to Programming using Python *Can students understand and apply the fundamental principles and concepts of computer science, including use of a high level programming language* **Year 8** Autumn Half Term 1 and 2 Website Creation *Can students follow a systems life cycle and create a 'website' on a theme park scenario. Students to follow a logical approach to the development of a website* Spring Half Term 1 Scratch – Game Creation *Can students understand and apply the fundamental principles and concepts of computer science, including use scratch to apply computational thinking* Spring Half Term 2 Introduction to Python *Can students understand and apply the fundamental principles and concepts of computer science, including use of a high level programming language. Can students know the concept of memory when using a computer.* Summer Half Term 1 Advanced spreadsheet modelling *Can students evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems?* Summer Half Term 2 Computer Crime and Cyber Security *Can students explain the differences between computer crime and cyber security and how this can take place.* *Can students understand the importance of keeping information safe and know techniques to keep data safe from cyber-attacks.* *Can students identify and explain the purpose of Data Protection Act, Copyright and Computer Misuse Act.* **Year 9** Autumn Half Term 1 and 2 Programming in Python *Can students understand and apply the fundamental principles and concepts of computer science, including use of a high-level programming language* *Can students design programs using pseudocode and flow diagrams.*

		Can students apply the skills and create programs for given case studies. Spring Half Term 1 Multimedia *Can students follow a systems life cycle and create a multimedia presentation on a given topic. Students to follow a logical approach to the development of the multimedia presentation.* Spring Half Term 2 Graphics using Adobe Photoshop *Can student use tools used in Adobe Photoshop to create and edit images.* *Can students optimize images and save images in suitable file formats.* *Can students use colour selection and conversion when creating images for Web and business publications.* Summer Half Term 1 Ethics, legal and environmental impact of technology *Can students give a variety of examples of digital technology and how this impacts society.* *Are students responsible, competent, confident and creative users of information and communication technology?* *Can students understand and apply the fundamental principles and concepts of computer science* Summer Half Term 2 *Exploring User Interface Design Principles and Project Planning Techniques* *Can students analyse different types of user interface meet design principles and user needs, with relevant detailed examples.* *Can students assess how effectively different types of user interface meet the design principles and user needs, with justified examples.*
	KS1/2 links	Students are introduced to algorithmic thinking as early as KS1 and this concept is built upon through KS1 and KS2, moving on to simple coding. This includes finding errors and debugging simple programs. There is a clear focus on identifying technology used beyond the classroom, which encourages them to become discerning users of technology. Digital literacy plays a big part in giving students skills **in** end-user software, including word-processors, spreadsheet software and desktop publishing as well as giving them confidence in using the Internet purposefully and responsibly.

KEVI HWGA Curriculum Map

	Autumn 2022		Spring 2023		Summer 2023	
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 13 BTEC Level 3 in IT **The course to be complete in one academic year (A Level class split into two courses – A Levels and BTEC L3 IT)**	**Unit 2 – Creating Systems to Manage Information** **Examine** the structure of data and its origins, and how an efficient data design follows through to an effective and useful database. **Examine** a given scenario and develop an effective design solution to produce a database system. **Test** your solution to ensure that it works correctly. **Evaluate** each stage of the development process and the effectiveness of your database solution.		**Unit 6 – Website Development** **Review** existing websites – commenting on their overall design and effectiveness. **Use scripting languages** such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. **Reflect** on the website design and functionality using a testing and review process.			
Key Concepts	**Unit 2 – Creating Systems to Manage Information** Data Management Problem Solving		**Unit 6 – Website Development** Algorithms Problem Solving Communication and coordination Digital Literacy			
Key Knowledge and skills	**Unit 2 – Creating Systems to Manage Information** **A** The purpose and structure of relational database management systems *(relational database management systems, manipulating data structures and data in relational databases and normalisation)*		**Unit 6 – Website Development** ***A** Website products (purpose and principle, factors affecting performance)* *Students to analyse purpose of various websites and explain the key principles of website design.*			

	Students to understand types of relational database management systems (RDBMS) and their characteristics. *Students to manipulate data structures and data in relational databases.* *Students to normalise database by going through the stages of normalisation (UNF – 1NF – 2NF – 3NF)* **B** Standard methods and techniques to design relational database solutions *(relational database design and design documentation)* Students to select RDBMS and use SQL software tools, techniques and processes. Students to understand the features and characteristics of relational database design techniques and their application to solve problems. **C** Creating a relation database structure (producing a database solution and testing and refining the database solution) Students to select and configure appropriate RDBMS and SQL tools to produce a database solution to meet client's requirements. Students to carry out testing and make refinements based on feedback. **D** Evaluating a database development project (database design evaluation, evaluation of database testing and evaluation of the database)	*Students to understand how media, objects, creativity and innovation techniques can be used to enhance the website design.* *Students to use search engine optimisation techniques to promote their website. Students to find out factors affecting website performance and understand scripts, browser compliance, server-side factors, and client-side factors.* ***B** Website design (tools and techniques used to create websites)* *Students to understand the steps involved in developing a design for a client website (problem definition, purpose, application of website design, initial design ideas/prototypes, client-side scripting design tools, obtaining and using feedback , test plan and identifying technical and design constraints.* *Students to use common tools and techniques when producing their websites. This includes: HTML, tables, forms, navigation, interactive components, colour schemes, CSS, embedded multimedia, accessibility features, platform compatibility and exporting and compressing of digital assets.* ***C** Develop a website (Client-side scripting languages, website development, website review, website optimisation, skills/knowledge/behaviours)* *Students to use client-side scripting languages to create their website and develop interactive website.* *Students to fully review their website in terms of: quality in comparison with other similar website, suitability for intended purpose and audience, suitability against the client's requirements, legal and ethical constraints and strengths/improvements.*		

	Students to understand the characteristics, concepts, impact and implications of testing methodologies to monitor and evaluate database design, the database created, testing processes and success of the solution. Students to evaluate a design against the given requirements. Students to evaluate the application of test data to ensure that the database solution meets requirements, Students to evaluate the software outcome against the given requirements.			
HPL	**Unit 2 – Creating Systems to Manage Information** Fluent thinking Resilience Complex & multistep problem solving Thinking Practice Originality Connection finding Critical or logical thinking Enquiring	**Unit 6 – Website Development** Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking Complex & Multi step problem solving Resilience Practise		
Assessments (formative and summative)	**Unit 2 – Creating Systems to Manage Information** Past exam questions (self and peer assessment) Mock paper **External exam unit (Attempt One: Jan or Feb 2024). Attempt Two: May 2024)**	**Unit 6 – Website Development** Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 3, Unit 6 assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 3 assessment plans.		

		Summative assessment – 2nd (final) submission in accordance to our BTEC **Summative assessment** Level assessment plans which are Agreed and Approved by our BTEV IV.		
Year 12 BTEC Level 2 IT	**Unit 1 – Information Technology Systems** **Autumn 1** | **Autumn 2** **Explore** the relationships between the hardware and software that form an IT system, and the way that systems work individually and together, as well as the relationship between the user and the system. **Examine** issues related to the use of IT systems and the impact that they have on organisations and individuals. In this unit you will draw on your learning from across your programme to complete assessment tasks. **Unit 2 – Creating Systems to Manage Information** **Examine** the structure of data and its origins, and how an efficient data design follows through to an effective and useful database. **Examine** a given scenario and develop an effective design solution to produce a database system. **Test** your solution to ensure that it works correctly. **Evaluate** each stage of the development process and the effectiveness of your database solution.	**Unit 3 – Using Social Media in Business** **Spring 1** | **Spring 2** **Explore** the impact of social media on the ways in which businesses promote their products and services **Develop** a plan to use social media in a business to meet requirements **Implement** the use of social media in a business.	**Unit 6 – Website Development** **Summer 1** | **Summer 2** **Review** existing websites – commenting on their overall design and effectiveness. **Use scripting languages** such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. **Reflect** on the website design and functionality using a testing and review process.
Key Concepts	**Unit 1 – Information Technology Systems** Communication and coordination Hardware and Software Digital Literacy	**Unit 3 – Using Social Media in Business** Hardware and Software Communication and coordination Digital Literacy	**Unit 6 – Website Development** Algorithms Problem Solving Communication and coordination Digital Literacy

Key Knowledge and skills	**Unit 1 – Information Technology Systems** **A** Digital device in IT systems *(digital devices/their functions and use, peripheral devices and media, computer software in an IT system, emerging technologies, choosing IT systems)* Students to examine the features and uses of digital devices in IT systems to meet the needs of individuals and organisations. Students to examine the features and uses of peripheral devices and media in IT systems to meet the needs of individuals and organisations. Students to understand the concepts and implications of the use of, and relationships between, hardware and software that form large- and small-scale IT systems and their impact on individuals and organisations. Students to research and analyse how emerging technologies can be used by individuals and organisations. Students to analyse how the features of an IT system can affect its performance and/or the performance of a larger IT system. **B** Transmitting data *(connectivity, networks, issues relating to transmission of data)* Students to understand the concepts, process and implications of transferring data within and between IT system. Students to understand the concepts and implications for individuals and organisations of connecting devices to form a network. Students to understand how the features and processes of data transmission affect the use and performance of IT systems.	**Unit 3 – Using social media in Business** ***A*** *Impact of social media (social media websites, business use of social media, risks and issues)* Students to understand the developments in social media affect the way businesses promote products and services. Students to understand how businesses can use social media websites to support their business aims and needs. Students to understand the features of social media websites tailored to business needs. *Students to explain business uses of social media.* *Students to analyse risks and issues of using social media* ***B*** *Develop a plan (social media planning processes, business requirements, content planning and publishing, developing an online community, developing a social media policy, reviewing and refining plans)* Students to understand processes to consider when planning the potential use of social media in a business. Students to consider business requirements for the given case study. Students to plan content for publishing. Students to develop an online community using social media planforms. Students to develop a social media policy.	**Unit 6 – Website Development** ***A*** *Website products (purpose and principle, factors affecting performance)* *Students to analyse purpose of various websites and explain the key principles of website design.* *Students to understand how media, objects, creativity and innovation techniques can be used to enhance the website design.* *Students to use search engine optimisation techniques to promote their website.* *Students to find out factors affecting website performance and understand scripts, browser compliance, server-side factors, and client-side factors.* ***B*** *Website design (tools and techniques used to create websites)* *Students to understand the steps involved in developing a design for a client website (problem definition, purpose, application of website design, initial design ideas/prototypes, client-side scripting design tools, obtaining and using feedback , test plan and identifying technical and design constraints.* *Students to use common tools and techniques when producing their websites. This includes: HTML, tables, forms, navigation, interactive components, colour schemes, CSS, embedded multimedia, accessibility features, platform compatibility and exporting and compressing of digital assets.*

	C Operating Online *(online systems, online communities)* Students to explain the implications for individuals and organisations of using online IT systems Students to explain the features, impact and implications of the use of online IT systems to store data and perform tasks. Students to understand the features of online communities and the implications of their widespread use for organisations and individuals. **D** Protecting data and information *(threats to data, information and systems, protecting data)* Students to understand the features, uses and implications of systems and procedures used to protect the data of individuals and organisations. **E** Impact of IT systems *(online services, impact on organisations, using an manipulating data, legal/moral issues)* Students to understand the uses, issues and implications of IT systems and their impact on individuals and organisations Students to understand how the features of online services are used to meet the needs of individuals and organisations. Students to understand the uses, processes and implications for individuals and organisations of accessing and using data and information in digital form. **F** Legal issues	Working with a client and other relevant stakeholders students to improve the quality, effectiveness, and appropriateness of the plans. ***C** Implement social media platforms (create accounts and profiles, content creation and publication, implementation of online community building, data gathering and analysis, skills/knowledge/behaviours.* *Students to create accounts and profiles.* *Students to create content and publications.* *Students to implement online community building (use of hashtags, joining groups, following people, monitoring, and using tools and techniques to automate content posting).* *Students to gather and interpret data on social media websites using dedicated tools, e.g. Facebook Insights, Twitter Analytics, Google Analytics and Tweet Reach.* *Students to evaluate skills, knowledge and behaviours.*	***C** Develop a website (Client-side scripting languages, website development, website review, website optimisation, skills/knowledge/behaviours)* *Students to use client-side scripting languages to create their website and develop interactive website.* *Students to fully review their website in terms of: quality in comparison with other similar website, suitability for intended purpose and audience, suitability against the client's requirements, legal and ethical constraints and strengths/improvements.*

	Students to understand the legal issues relating to the use of IT systems and the implications for individuals, organisations, and wider society.		
HPL	**Unit 1 – Information Technology Systems** Fluent Thinking Resilience Perseverance Complex & Multi step problem solving Critical or logical Thinking Practise	**Unit 3 – Using Social Media in Business** Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking Complex & Multi step problem solving Practise	**Unit 6 – Website Development** Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking Complex & Multi step problem solving Resilience Practise
Assessments (formative and summative)	**Unit 1 – Information Technology Systems** Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing Seneca Assignments End of unit assessments **External exam unit (Attempt One: Jan or Feb 2024). Attempt Two: May 2024)**	**Unit 3 – Using social media in Business** Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 3, Unit 6 assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 3 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our BTEC **Summative assessment** Level assessment plans. Agreed and Approved by our BTEV IV. Moderation will take place by BTEC IV to carry out the moderation process in May 2024.	**Unit 6 – Website Development** Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 6, Unit 6 assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 3 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our BTEC **Summative assessment** Level assessment plans. Agreed and Approved by our BTEV IV.

Year 11 OCR GCSE Computer Science	9-1 OCR GCSE Computer Science **2.1 Algorithms and 2.2 Programming** Component 2 **Autumn 1** | **Autumn 2** *****Spring 1 – focus will also be on 2.1 and 2.2 as this is the backbone to Component 2. Lessons will also focus on consolidating Component 2 exam questions to ensure students master problem solving.**	9-1 OCR GCSE Computer Science **2.4 Boolean Logic** Component 2 **Spring 1**	9-1 OCR GCSE Computer Science **2.5 Programming languages and Integrated Development Environments** **Revision and final exams** Component 2 **Spring 2** **Summer 1**	
Key Concepts	Algorithms Problem Solving Programming Constructs	Mathematical concepts and logic	Hardware and Software Programming Constructs	
Key Knowledge and Skills	- Understand what an algorithm is, what algorithms are used for and be able to interpret algorithms (flowcharts, pseudocode, written descriptions, program code) - Understand how to create an algorithm to solve a particular problem, making use of programming constructs (sequence, selection, iteration) and using appropriate conventions (flowchart, pseudocode, written description, draft program code) - Understand the purpose of a given algorithm and how algorithm works - Understand how to determine the correct output of an algorithm for a given set of data - Understand how to identify and correct errors in algorithms - Understand how to code an algorithm in a high-level language - Understand how the choice of algorithm is influenced by the data structures and data values that need to be manipulated - Understand how standard algorithms (bubble sort, merge sort, linear search, binary search) work	- Understand simple loci diagrams using the operators AND, OR and NOT - Able to use truth tables for AND, OR and NOT - Able to draw diagrams for the AND, OR and NOT gates - Be able to apply logical operators in appropriate truth tables to solve problems - Able to apply computer-related mathematics using: +,-,/,*, MOD, DIV and exponentiation	- Understand the characteristics and purpose of different levels of programming language, including: Low-level languages High-level languages - Understand the purpose of translators - Describe the characteristics of a compiler and interpreter - Understand the use of an Integrated Development Environment (IDE) to develop programs (editors, error diagnostics and run-time environment) Component 2 revision	

	- Be able to evaluate the fitness for purpose of algorithms in meeting specified requirements efficiently using logical reasoning and test data - Be able to analyse a problem, investigate requirements (inputs, outputs, processing, initialisation) and design solutions - Be able to decompose a problem into smaller sub-programs - Understand how abstraction can be used effectively to model aspects of the real world - Be able to program in a high-level programming language - Understand the benefits of producing programs that are easy to read and be able to use techniques - Be able to differentiate between types of error in programs (logic, syntax, runtime) - Be able to design and use test plans and test data (normal, boundary, erroneous) - Be able to interpret error messages and identify, locate, and fix errors in a program - Be able to determine what value a variable will hold at a given point in a program (trace table) - Be able to determine the strengths and weaknesses of a program and suggest improvements - Understand the structural components of a program (variable, and type declarations, command sequences, selection, iteration, data structures, subprograms) - Be able to use sequencing, selection and iteration constructs in their programs - Understand the need for, and understand how to use data types - Be able to use data types effectively to make your programs more efficient - Be able to use one-dimensional and two-dimensional arrays - Be able to use validation in programs - Be able to coder that reads/writes/to a text file			

	- Understand the purpose of multiple, modulus, integer division - Able to use logical operators in programs			
HPL	Flexible thinking Perseverance Fluent Thinking Originality Complex & Multi step problem Solving Critical or Logical thinking Collaborative Big picture thinking Abstraction Imagination Precision Risk-taking	Big picture thinking Precision Connection finding Complex and multi-step problem solving Originality Fluent thinking Practice Resilience	Resilience Self-regulation Precision Speed and accuracy Self-Regulate Enquiring, Practise	
Assessments (formative and summative)	written feedback Past exam questions (self and peer assessment) **HT assessment - algorithms** **End of Term assessment – algorithms and programming** Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing Seneca Assignments	written feedback Past exam questions (self and peer assessment) **HT assessment – Boolean Logic** Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing Seneca Assignments	written feedback Past exam questions (self and peer assessment) **HT assessment – Programming languages and Integrated Development Environments** **End of Term assessment – algorithms, programming, and Boolean Logic** Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing Seneca Assignments Past Exam Papers (Component 2)	

Year 10 Computer Science	9-1 OCR GCSE Computer Science 1.1 System Architecture Component 1 Autumn 1	9-1 OCR GCSE Computer Science 1.2 Memory and Storage Component 1 Autumn 2	9-1 OCR GCSE Computer Science 1.3 Computer networks, connections and protocols Component 1 Spring 1	9-1 OCR GCSE Computer Science 1.4 Network Security Component 1 Spring 2	9-1 OCR GCSE Computer Science 1.5 Systems Software Component 1 Summer 1	9-1 OCR GCSE Computer Science 1.6 Ethical, legal, cultural and environmental impact Component 1 Summer 2
Key Concepts	Hardware and Software	Hardware and Software Mathematical concepts and logic	Communication and coordination	Security	Software	Digital Literacy
Key Knowledge and Skills	Students to explain the purpose of the CPU and explain the stages of fetch-execute cycle. Students to know what actions occur at each stage of the fetch-execute cycle. Students to understand common CPU components and their function. Students to explain the role/purpose of each component and what it manages, stores, or controls during fetch-execute cycle. Students to understand the concept of Von Neumann architecture and understand how this architecture functions.	Students to understand the reasons between primary and secondary storage. Students to understand the key characteristics of RAM and ROM. Students to explain why virtual memory may be needed in a system Students to explain how virtual memory works. Students to understand why computers have secondary storage. Students are able to recognise a range of secondary storage devices/medium.	Students to understand why computers are connected in a network and know the characteristics of LANs and WANs. Students to understand the different factors that can affect the performance of a network. Students to find out different pieces of hardware within a network and understand the functions of these hardware Students to understand the concept of the Internet as a network of computer networks	Students to explain how various threats pose security threat to devices/systems. Students to understand how each threat (malware/social engineering/brute-force/DOS/data interception/theft/SQL injection) take can place and what mechanism should be in place to counteract. Students to understand how to limit the treats. Students to understand methos to remove vulnerabilities.	Students to identify what each function of an operating system does. Students to explain the features of a user interface. Students to understand how memory management works and how this allows for multitasking. Students to understand that data is transferred between devices and the processor and this process needs to be managed and what this entails (e.g.	Students to understand that technology introduce ethical, legal, cultural, environmental and privacy issues. Students to know a variety of examples of digital technology and how this impacts on society. Students to build confidence to discuss the impact of technology based around the issues listed. Students to know the purpose of each legislation and the specific actions it allows or prohibits. Students to understand the need to license

	Students to understand how data travels within the system architecture using buses. Students to identify the purpose of various CPU registers and understand how these registers functions within the system architecture.	Students to compare advantages/disadvantages for each storage device and be able to apply knowledge in context within scenarios. Students to know why data must be stored in binary format. Students to be familiarised with data units and moving between each. Students be able to calculate capacity of devices. Students be able to calculate required capacity for a given set of files. Students to calculate file of sizes of sound, images and text files Students to understand how to convert positive denary whole numbers to binary numbers (up to and including 8 bits) and vice versa). Students to understand how to add two binary	Students to find out the functions of servers and the role of clients within a client-server model. Students to understand the Cloud and know the advantages/disadvantages of the Cloud Students to apply understanding of networks to a given scenario. Students to compare benefits and disadvantages of wired versus wireless connection. Students to recommend one or more connections for a given scenario. Students to understand the principles of encryption to secure data across network connections. Students to understand the purpose of IP addressing, MAC address and the principles of a standard (Ethernet). Students to understand the different types of	Students to analyse a scenario and identify potential threats and recommend solutions.	the use of buffers when transferring data to a printer) Students to explain how user management functions (e.g. allocation of an account, access rights, security etc) Students to understand the process of file management, and the key features (e.g. naming, allocation of folders, moving files, saving etc). Students to understand that computers often come with utility software, and how this performs housekeeping tasks Students to explain the purpose of the identified utility software and why it is required.	software and the purpose of a software licence. Students to know the features of open source and proprietary software. Students to recommend a type of license for a given scenario including benefits/drawbacks. Students to discuss ethical, legal, cultural, environmental and privacy issues based on a given scenario. Students to build confidence to share ideas and collaborate of these issues and provide their opinions and suggest solutions.

		integers together (Up to and including 8 bits) and explain overflow errors which may occur. Students to understand how to convert denary whole numbers into 2-digit hexadecimal numbers and vice versa. Students to understand how to convert binary integers to their hexadecimal equivalents and vice versa Students to know why a binary shift occurs	protocols used for different purposes. Students to understand the layers used in protocols, and the benefits of using layers with the TCP/IP model.			
HPL	Flexible thinking Originality Complex & Multi step problem Solving Critical or Logical thinking	Flexible thinking Perseverance Fluent Thinking Originality Complex & Multi step problem Solving Critical or Logical thinking Self-Regulation	Flexible thinking Perseverance Fluent Thinking Originality Complex & Multi step problem Solving Critical or Logical thinking	Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking	Flexible thinking Perseverance Fluent Thinking Originality Complex & Multi step problem Solving Critical or Logical thinking	Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking

Assessments (formative and summative)	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Formative Assessment – HT assessment on 1.1 System Architecture**	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Formative Assessment – HT assessment on 1.2 System Architecture** **Summative Assessment – 1.1 and 1.2 units assessment**	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Formative Assessment – HT assessment on 1.3 Computer networks, connections and protocols**	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Formative Assessment – HT assessment on 1.4 Network Security** **Summative Assessment – 1.3 and 1.4 units assessment**	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Formative Assessment – HT assessment on 1.5 System Software**	CS written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Summative Assessment – Component 1 Past Exam Paper**

Year 10 BTEC Level 2 Digital IT	BTEC Level 2 Digital Information Technology **Autumn 1** ***Component 1, Learning Aim: A)*** *Exploring user interface design principles and project planning techniques*	BTEC Level 2 Digital Information Technology **Autumn 2** ***(Component 1, Learning Aim: B)*** *Be able to use planning techniques to plan and design a user interface* ***(Component 1, Learning Aim: C*** *Be able to develop and review a user interface*	BTEC Level 2 Digital Information Technology **Spring 1** ***Component 2, Learning Aim: A)*** *Investigate the role and impact of using data on individuals and organisations*	BTEC Level 2 Digital Information Technology **Spring 2** **Summer 1** ***(Component 2, Learning Aim: B)*** *Create a dashboard using data manipulation tools*	BTEC Level 2 Digital Information Technology **Summer 2** ***(Component 2, Learning Aim: C*** *Draw conclusions and review data presentation methods*
Key Concepts	**Communication** **Digital Literacy**	**Communication** **Digital Literacy** **Hardware and software**	**Communication** **Digital Literacy**	**Data Management**	**Communication** **Digital Literacy**
Key Knowledge and Skills	Understand different types of user interfaces used by individuals and organisations: - Define user interfaces and understand their software and human features - Know different types of interface including text base, speech, GUI/WIMP, sensor, menus and forms - Know a range of uses and devices including computers, handheld devices, entertainment systems, domestic appliances, controlling devices and embedded systems	Understand what project planning tools are used to plan a user interface: - Tasks lists - Written or graphical descriptions - Gantt charts - Mood boards - Mind maps - Be able to investigate the waterfall, agile and scrum methodologies When creating a project proposal understand the following: - Purpose and audience - Project requirements - User accessibility requirements - Constraints When creating a project plan understand: - Timescales - Key milestones	Understand the concepts of data and that data is meaningless without converting it into information by adding structure and context. Understand the different ways of representing information and will be able to explain situations where they would be used. Students to use different ways to represent data and should be able to select the most suitable way to represent data based on the given situation	Understand how data can be imported from an external source. Students will then explore how to apply data processing methods. These include: data manipulation methods, macros, data validation, dashboard, cell comments and conditional formatting, Students will use a dashboard to select and display information summaries based on	Students will draw conclusions on the data set, using their dashboard to make recommendations. Students to demonstrate drawing conclusions based on trends, patterns, anomalies and possible errors. Using their dashboard, students to provide detailed recommendations by considering: which customers/areas to target for advertisement, where to deploy staff

	Understand the factors affecting the choice of user interface including: - Performance / response time, ease of use - User requirements, user experience - Accessibility and storage space - Understand hardware and software influence - Operating systems and platforms, types/size of screen, types of user input - Hardware resources available such as processor and memory - Emerging technologies Be able to investigate the needs of audiences and how they affect the design of interfaces including: - Accessibility needs – visual, hearing, speech, motor, cognitive - Skill level – expert, regular, occasional, novice - Demographics – age, beliefs/values, culture, past experiences	Create an initial design that includes: - The user requirements - Input and output requirements - User accessibility needs Produce a design specification that includes: - Visualisation such as storyboard and sketches - Hardware and software requirements Discuss the aims of the design Develop an initial design using the following design principles: - Colour - Font style/size - Language - Amount of information - Layout - User perception - Retaining user attention - Intuitive design Be able to review the success of the user interface including the strengths and weaknesses in: - Meeting the user requirements - Suitability for purpose and audience - Ease of use - Accessibility features - How effectively the design principles have been met Review the chosen project planning techniques Suggest improvements that could be made to the user interface to better meet the audience needs	Understand the methods that can be used to ensure data input is suitable and within boundaries so that it is ready to be processed. Students to use various validation and verification methods, so that they know the importance of keeping data within parameters and verified. Understand how the data collection method and data collection features affect its reliability. Students will analyse data collection methods (primary and secondary) and use data collection methods to analyse data. Understand the factors that affect the quality of information and their impact on decision making. Students to identify quality of information factors and explain why these are important factors that affect the quality of information. Understand that different types of	a given large data set. The dashboard should show data summaries from the data set, appropriate presentation methods and features used.	to deal with increased demands and how and when to adapt transport schedules. Students will assess how well they have used the presentation features (LAB), to ensure they do not lead to: information being misinterpreted, information being biased and inaccurate conclusions being made.

			organisation use data modelling to help make decisions. Students to analyse different type of sectors and explain how different sectors use data to make important decisions. Understand the different threats that face individuals who have data stored about them. Students to explore threats to individuals and analyse ways how these threats can be eliminated.		
HPL	• Big picture thinking • Self regulation • Connection finding • Imagination	• Big picture thinking • Self regulation • Connection finding • Imagination	'Big picture' thinking Enquiring Collaborate Connection finding	Confident Practice Intellectual Playfulness Fluent Thinking Connection Finding Resilience Perseverance Automaticity	Fluent Thinking Resilience Perseverance Complex & multi step problem solving Critical or Logical Thinking Practise
Assessments (formative and summative)	Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and devising appropriate intervention strategies.	Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 2, Component 2 (LAB/C) assessment criteria and tracked.	Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific targets, and	Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific	Independent work to be produced and students are expected to adhere to BTEC guidelines on internal units. Our centralised departmental trackers will be used to track progress, set specific

	Students to be continuously assessed against BTEC Level 2, Component 1 (LAA) assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 2 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our assessment plans which are Agreed and Approved by our BTEV IV.	Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 2 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our assessment plans which are Agreed and Approved by our BTEV IV.	devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 2, Component 2 (LAA) assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 2 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our assessment plans which are Agreed and Approved by our BTEV IV.	targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 2, Component 2 (LAB) assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 3 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our BTEC **Summative assessment** Level assessment plans which are Agreed and Approved by our BTEV IV.	targets, and devising appropriate intervention strategies. Students to be continuously assessed against BTEC Level 2, Component 2 assessment criteria and tracked. Moderation will take place by BTEC IV to carry out the moderation process in May 2024. **Formative assessment** – 1st submission in accordance to our BTEC Level 3 assessment plans. **Summative assessment** – 2nd (final) submission in accordance to our BTEC **Summative assessment** Level assessment plans which are Agreed and Approved by our BTEV IV.

Year 9 Computer Science /ICT	Python Programming (Advanced) **Autumn 1** **Autumn 2** *** In the first few lessons, students will be trained on using our platforms (using one drive, organising folders, rename files, downloading files and saving it to one drive, Seneca premium, Teams, staff zone etc)	Advanced Multimedia **Spring 1** Interactive multimedia products are used widely in everyday life in the creative and digital media sector. They are used in computer games, mobile phone applications, presentations and many other areas. This unit will enable learners to understand the basics of interactive multimedia products for the creative and digital media sector. They will learn where and why interactive multimedia is used and what features are needed for a given purpose. It will enable them to interpret a client brief, and to use time frames, deadlines and preparation techniques as part of the planning and creation process when creating an interactive multimedia product. On completion of this unit, learners will understand the purpose and properties of	Digital Graphics **Spring 2** Digital graphics feature in many areas of our lives and play a very important part in today's world. The digital media sector relies heavily on these visual stimulants within the products it produces, to communicate messages effectively. The aim of this unit is for students to: Understand the basics of digital graphics editing for the creative and digital media sector. Learn where and why digital graphics are used and what techniques are involved in their creation This unit will develop learners' understanding of the client brief, time frames, deadlines and preparation techniques as part of the planning and creation process.	Social/Cultural & Environmental impact of Digital Technology **Summer 1** The use of computers has brought about ethical, legal, cultural and environmental impacts. These issues increasingly affect people's daily lives. During this unit students will be able to: • List ethical issues, cultural issues and environmental issues in relation to a given scenario • List items of legislation that relate to digital technology • Discuss the impacts of digital technology on the wider society including ethical	Exploring User Interface Design Principles and Project Planning Techniques **Summer 2** User interfaces allow individuals and individuals in organisations to interact with digital technologies. The design of the user interface is crucial in ensuring that users are able to interact positively with their hardware devices. You are working as a Digital Marketing Manager. You are asked to create an advert to launch a new animated film. You need to think of the movie name you are going to launch. In order to have a successful user interface of the advert, it is important to research different user interfaces used and provide

		interactive multimedia products, be able to plan and create an interactive multimedia product to a client's requirements and review it, identifying areas for improvement.	On completion of this unit, students will understand the purpose and properties of digital graphics, and know where and how they are used. They will be able to plan the creation of digital graphics, create new digital graphics using a range of editing techniques and review a completed graphic against a specific brief.	issues, cultural issues and environmental issues • Discuss the impact of manufacture, disposal, upgrading and replacing digital technology • Discuss the impact of e-waste • Discuss the impact of digital technology regarding legal issues and privacy issues • Describe legislation relevant to Computer Science • Describe the features of open source and proprietary software licences • List the clauses of the Data Protection Act and Computer Misuse Act and give examples of situations in	evidence that clearly assesses how: effectively the user interface meets the audience's requirements, including their accessibility needs, skills level and demographics effectively different design principles have been used to allow both appropriate and effective user interactions with hardware devices techniques have been used to allow different types of users to efficiently interact with the interface.

				which they are relevant • Evaluate the impact of and issues related to the use of computers in society	
Key Concepts	Algorithm Problem Solving Programming Constructs	Software Communication and coordination Digital Literacy	Software Problem Solving Digital Literacy	Digital Literacy Communication and coordination	Problem Solving Communication and coordination Digital Literacy Software
HPL	Complex & Multi Step Problem Solving Perseverance Enquiring Critical or logical thinking Complex & Multi step problem solving Practice Resilience Confident	Fluent Thinking Resilience Perseverance Complex Multi-step problem solving Originality Imagination Self-regulation Collaborate Practice 'Big picture' thinking	Connection finding Practice Originality Imagination Complex Multi-step problem solving Confident Self-regulate 'Big picture' thinking	Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking	Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking Imagination Problem solving Resilience Practise
Key Knowledge and Skills	Identify and name variables and constants Recognise the need for variables and constants Be able to assign input to a variable and output it Understand the need for various data types Be able to convert (cast) a variable from any of these types to any other, if possible Choose the best data type for the problem among integer, real, Boolean, character and string Use the common arithmetic operators including mod and div	Select appropriate criteria to carry out a web search Identify suitable information from a range of sources Know the features of a multimedia PPT Analyse a multimedia product to gain an understanding of multimedia structures	To explain the purpose of digital graphics Understand what is required when creating a visualisation diagram for your product. Have a good understanding of what photoshop can achieve – this will help you to	Explain the difference between morals and ethics Describe the cultural issues affected by Computer Science Investigate ethical and cultural issues related to Computer Science technologies. Investigate legal issues related to	Exploring User Interface Design Principles and Project Planning Techniques Research what a user interface is Select any two types of user interface and for each of the selected interface

	Know comparison operators and use it in programming Use input, output and assignment statements Be able to break a complex task into a sequence of simple steps which would each require one line of pseudocode and/or one block in a flowchart Understand that the order of steps in algorithms matters Use selection to construct your program Write selection statements using if, else, elif Use iteration to construct your program Write iteration statements using for and while loop Be able to analyse a problem, investigate requirements (inputs, processes, output) and design solutions Be able to program abstraction of real-world examples. Understand the benefit of producing programs that are easy to read and be able to use techniques (comments, descriptive names (variables, constants) to improve readability and to explain how the code works.	Consider design plans for your own Multimedia product Understand why companies create effective Logos To be able to create an effective multimedia PPT on your chosen Theme Park Identify what improvements need to be made Work towards improving the Multimedia Product	become more creative in your final product Identify what improvements need to be made Work towards improving the Multimedia Product	Computer Science technologies Study legislation relevant to Computer Science: - The Data Protection Act 1998 - Computer Misuse Act 1990 - Copyright Designs and Patents Act 1988 Explain the differences between proprietary and open source software Discuss the advantages and disadvantages of both types of software Explain why computing technology poses a threat to privacy Discuss the benefits and drawbacks of giving away personal information Consider the environmental impact of Computer Science Students to understand the need to license software	explain how effective the user interface is Research factors affecting the choice of 'user interface' Consider hardware/software needed on these devices Explain what design principles are used in each interface. Justify how two different types of user interface meet the design principles and user needs Give your opinion how the design principles used in two different user interface will have positive or negative effects on the user and their ability to positively interact with the device using detailed examples.

				and the purpose of a software licence. Students to know the features of open source and proprietary software. Students to recommend a type of license for a given scenario including benefits/drawbacks. Students to discuss ethical, legal, cultural, environmental and privacy issues based on a given scenario. Students to build confidence to share ideas and collaborate of these issues and provide their opinions and suggest solutions.	
Assessments (formative and summative)	**Formative** Questioning Q & A (new programming terminology, data types, if & else, programming tasks) Observations of completed Python Programmes Completed tasks Turn and talk observations Peer Feedback Do Now Task **Summative**	**Formative** Questioning Q & A on search criteria, fact file, fact to include Observations Completed tasks Turn and talk observations Peer Feedback Do now Task	**Formative** Questioning Q & A on digital graphics Observations Completed tasks Turn and talk observations Peer Feedback Do now Task **Summative**	**Formative** Written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing	**Formative** Written feedback Past exam questions (self and peer assessment) Online quizzes – MCQs Think/Pair/Share Retrieval practice Low stakes quizzing **Summative**

	Low stake quiz/test Practical Project (portfolio)	**Summative** Low stake quiz/test End of unit practical assessment (creation of a multimedia Presentation – assessed against the grading criteria) End of unit exam	Practical Portfolio assessed against the assessment criteria End of unit practical assessment	**Summative** Assessment – End of unit exam	Report on user interface – marked against the grading criteria
Year 8 Computer Science / ICT	**Website Development** **Autumn 1** **Autumn 2** This unit will enable students to understand the basics of creating multipage websites. It will enable learners to demonstrate their creativity by combining components to create a functional, intuitive and aesthetically pleasing website. It will allow them to interpret a client brief and to use planning and preparation techniques when developing a multipage website. On completion of this unit, students will be able to explore and understand the different properties, purposes and features of multipage websites, plan and create a multipage website and review the final website against a specific brief.	**Programming – Use of Scratch** **Spring 1** Scratch opens up the opportunity for students to become creative communicators, computational thinkers and empowered learners. When students gain experience in designing and coding projects that express their ideas, they develop computational fluency.	Python Programming (intermediate) **Spring 2** There is a computer program behind just about everything we use today. Without computer programs many things, from washing machines to aeroplanes, would not have technological capabilities we have come to rely on.	Advanced Spreadsheets **Summer 1** Spreadsheet skills prepare students for the future. Spreadsheet skills allow students to: Organise Calculate Create graphs Analyse data	Computer Crime & Cyber Security **Summer 2** Students will study some: - legal safeguards regarding computer use, including overviews of the

	*** In the first few lessons, students will be trained on using our platforms (using one drive, organising folders, rename files, downloading files and saving it to one drive, Seneca premium, Teams, staff zone etc)	By enabling students to program their own stories, games and animations, Scratch is intended to help "young people learn to: Think: creatively reason systematically work collaboratively	Python is one of the most popular programming languages in the world and this unit will teach students: • How to write basic programs in Python • Become familiar with key terminology in programming • Understand why sequencing is important All activities require students to code in Python. The key programming construct underpinning all work in this unit is sequencing.	Use/practise formulas Apply formatting techniques Understand IF statements Practise conditional formatting Understand use of data validation These skills provide a critical foundation in preparation for future studies and the workplace. Today, many careers require knowledge of how to use a spreadsheet program.	Computer Misuse Act - Data Protection Act and Copyright Law and their implications for computer use - Phishing scams and other email frauds, hacking, "data harvesting" and identity theft will be studied and are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed.
Key Concepts	Algorithms Problem Solving	Algorithm Problem Solving	Algorithm Problem Solving	Data Management Digital Literacy	Communication and coordination

	Communication and coordination Digital Literacy	Programming Constructs	Programming Constructs		Digital Literacy
HPL	Originality Fluent Thinking Connection Finding Confident Enquiring Critical or Logical Thinking Complex & Multi step problem solving Resilience Practise	Complex & Multi Step Problem Solving Perseverance Enquiring Critical or logical thinking Complex & Multi step problem solving Practice Resilience Confident	Complex & Multi Step Problem Solving Perseverance Enquiring Critical or logical thinking Complex & Multi step problem solving Practice Resilience Confident	Practice Perseverance Confident Fluent Thinking Complex multi step problem solving Perseverance Practise Resilience	Connection finding Practice Originality Imagination Complex Multi-step problem solving Confident Self-regulate 'Big picture' thinking
Key Knowledge and Skills	Select appropriate criteria to carry out a web search Identify suitable information from a range of sources Select appropriate criteria to carry out an effective web search Identify essential information from a range of sources Know the features of websites Analyse websites to gain an understanding of website structures Consider design plans for your own website Understand Why companies create Logo and Why websites have clear titles To be able to create a website on a theme park Identify what improvements need to be made Work towards improving the website Evaluate the Website Identify possible improvements Adapt the website so it is suitable for a different audience	Understand what is meant by Game Designer Interface of Scratch. Construct a set of instructions to move an object around the screen. Know the difference between an algorithm and pseudocode. Create your own sequence of instructions. Select control blocks to create and refine animations. Define what 'selection' means Define what 'selection' and 'iteration' mean Create your own sequence of instructions to include 'selection' and 'iteration' blocks	Know what Python is and some of the applications it is used for Run a simple Python program in Interactive mode using the input and print functions Write, save and run a program in Script mode Understand what a syntax error is and how to interpret an error message Know the rules for variable names and use variables in a program Understand the use and value of comments in a program Understand the importance of using correct data types: string, integer or float	State the purpose of a spreadsheet Define keywords associated with spreadsheets Develop an understanding of data, spreadsheets and create basic formulae. Input data into a spreadsheet and create basic formulae. Create a financial model to predict the profit on the sale of merchandise Make the model as realistic as possible based on known sales figures and prices	Identify common types of computer crime Look at examples of computer crime on the Internet Learn about different types of email scam, Recognise the signs of fraudulent emails Learn about the Computer Misuse Act – which makes certain activities illegal Look at examples of computer misuse Understand what is meant by hacking Understand what is meant by malware

		Give an example of a logical operator Use 'operator' and 'broadcast' blocks Explain how logical operators can be used Create a 2 player computer game	Use the int, float and round functions Understand how to use assignment statements correctly Perform arithmetic using the BIDMAS rule Write a program involving input, calculation and output Use selection statements if, else and elif in a program Learn how to use different comparison operators Use indentation correctly to define a block of code Learn to write algorithms in pseudocode Review the difference between syntax errors, run-time errors and logic errors Learn techniques for debugging programs Use a while loop in a program Use an if statement within a while loop Use a function to generate a random number	Consider ways of increasing profit to meet a given target Use a spreadsheet to model outcomes Use functions including Max, Min and IF Name a cell Sort data Try out different 'What IF' scenarios to achieve a goal Create a seat booking system for a live show Use validation techniques to ensure that only valid data can be entered Use conditional formatting to show which seats have been booked Use a Countif function in calculations of seat sales	Learn ways to protect yourself from malware and hacking Be aware of who might hold personal data about you Discuss the need for various organisations to hold data about you Be aware of the possibility of identity theft Know how to minimize the chance of identity theft Learn about Copyright law, what it says and what it means Look at examples of copyright infringement Understand the damage that illegal copying does to individuals, companies and society Compare copyright infringement with plagiarism Learn about some of the common health and safety problems

				Compare alternative algorithms for a given problem Use a linear search to find a number Understand how a binary search works		associated with computer use Learn ways of avoiding these problems Learn about Health and Safety law
Assessments (formative and summative)	**Formative** Questioning Observations Completed class tasks Do Now tasks Observations of logo design and website Q & A of logo features, website Peer feedback on logo and website Self-assessment using the given grading sheet (PLC) **Summative** Log and website creation (final products marked against the grading criteria)		**Formative** Questioning Q & A on Scratch environment Observations Completed programme in Scratch Peer Feedback Do now Task **Summative** Low stake quiz/test	**Formative** Questioning Check student code Observations Q & A on sequencing Class discussion **Summative** Low stake quiz/test End of unit Test	**Formative** Observations Cold calling Discussion Completed tasks in Excel – checklist used to grade students on their practical tasks Q & A **Summative** Low stake quiz/Test	**Formative** Questioning Observations Completion of work set (worksheets) Q and A Peer assessment Discussions **Summative** Low stake quiz/ test
Year 7 Computer Science / ICT	**Use of Technology/Applications** **Autumn 1** This is a practical unit where students will be introduced to the School Network. They will learn: How to log on to the school network (update their password)	**E-Safety** **Autumn 2** E-Safety is a very important topic and it is all about students developing skills which can help protect themselves against dangers found on: - The Internet - Their computer	**Flowol** **Spring 1** This is a practical unit covering the principles of producing control and monitoring solutions using a flowchart-based interface. Pupils will start by producing systems that use simple loops and basic	**Binary** **Spring 2** This unit of work provides students with an insight into how a digital processor works. Students will learn: - How all data is stored, processed and	**Multimedia** **Summer 1** Interactive multimedia products are used widely in everyday life in the creative and digital media sector. They are used in computer games, mobile phone	**Introduction to Python** **Summer 2** There is a computer program behind just about everything we use today. Without computer programs many things, from washing machines to aeroplanes, would

	Introduced to the school desktop area Save files and folders on one drive Create folders for all subjects How to create and send an email Introduced to the Teams interface and use of Teams Set up and use of Seneca Coverage of these areas will mean year 7 will be confident to use the school network and applications on the school network.	- Other forms of ICT like mobile phones. Each of these ICT devices can expose students to danger. By the end of this unit students should be able to: - Recognise these dangers - Know how to avoid these dangers - Know what to do if they become exposed to these dangers.	outputs, and then move on to look at systems that have multiple inputs and outputs. They will refine their solutions using subroutines and variables. Students will: • Design, use and evaluate computational abstractions that model the state and behaviour of real world problems and physical systems. Students will identify everyday situations where computer control is used and give examples. Students will be given opportunities to: • Identify common types of sensors used by control systems. • Identify control flowchart symbols and understand how they are used to break down problems. • Produce flowchart-based solutions for control systems that include sequences and loops.	generated by a computer. - All data is represented by just two digits, a 1 and 0. - Binary to denary conversion - Denary to binary conversion - Rules of binary addition - How to complete binary addition sums	applications, presentations and many other areas. This unit will enable learners to understand the basics of interactive multimedia products for the creative and digital media sector. They will learn where and why interactive multimedia is used and what features are needed for a given purpose. It will enable them to interpret a client brief, and to use time frames, deadlines and preparation techniques as part of the planning and creation process when creating an interactive multimedia product. On completion of this unit, learners will understand the purpose and properties of interactive multimedia products, be able to plan and create an interactive multimedia product to a client's requirements and	not have technological capabilities we have come to rely on. Python is one of the most popular programming languages in the world and this unit will teach students: • How to write basic programs in Python • Become familiar with key terminology in programming All activities require students to code in Python.

			• Explain why control systems might fail and how this might impact on safety. • Produce control solutions for problems that include subroutines. • Produce control solutions for problems that include variables.		review it, identifying areas for improvement.	
Key Concepts	Communication and coordination Software	Digital Literacy Software	Problem Solving Algorithms	Mathematical concepts and logic	Software Communication and coordination Digital Literacy	Algorithm Problem Solving Programming Constructs
HPL	Connection Finding Critical or Logical Thinking Resilience Practise Perseverance	Confident Collaborative Critical or Logical Thinking Fluent Thinking Complex & Multi step Problem solving	Flexible Thinking Perseverance Fluent Thinking Originality Fluent Thinking Complex & Multi step problem solving Originality Critical or Logical Thinking	Big Picture Thinking Originality Fluent Thinking Practise Perseverance Confident Automaticity Resilience Speed & Accuracy	Fluent Thinking Resilience Perseverance Complex Multi-step problem solving Originality Imagination Self-regulation Collaborate Practice 'Big picture' thinking	Complex & Multi Step Problem Solving Perseverance Enquiring Critical or logical thinking Complex & Multi step problem solving Practice Resilience Confident
Key Knowledge and Skills	Students confidently log on to the school network and become familiar with the Desktop. - Log on to the school network	Identify what is meant by the term "personal data". Understand how to keep safe whilst using social networking websites.	Understand the term 'Algorithm' Create an Algorithm by writing Pseudo Code	Understand that computers see everything in a series of 1s and 0s Describe what binary is	Select appropriate criteria to carry out a web search Identify suitable information from a range of sources	Understand the purpose of programming languages;

	- Understand how to locate software on the school network. - Create subject folders Students to learn how to create and send emails to teachers. Familiarise themselves with the Teams application. - Create email - Send email - Use of Teams/files/posts - Log on to Seneca – familiarise themselves with Seneca. Identify common types of Scams Understand how to avoid Scams Students to practise skills in use of applications to complete lesson task	Create a poster about how to stay safe when using social networking websites. Identify what is meant by the term "personal data". Understand how to keep safe whilst using social networking websites. . Understand the dangers of talking to strangers online. Know what to do if you feel uncomfortable when talking to someone online Explain how people may be cyber bullied. Explain the difference between cyber bullying and other forms of bullying and what to do if they are a victim of bullying or see other people being bullied. Create a professional looking poster to tell year 7 pupils about the dangers of cyber bullying and what to do if they are a victim of bullying. To analyse the difference between the social	Develop an understanding of basic flowchart symbols. Develop a flowchart solution for a simple problem. Understand what is a sequence. Develop a control solution using a simple Flowchart solution Understand what is a sequence for a two way bridge lights system Complete flowcharts for two way traffic lights system using Flowol Understand how to develop an existing sequence for a traffic lights system. Complete flowcharts for both Bridge Traffic Lights system using Flowol. Develop a control solution for a system that includes a subroutine Understand how the use of subroutines can make programs more efficient	Explain the denary number system. Understand the base-2 system Understand the base-10 system Explain how the base-2 and base-10 systems are represented Recognise binary and denary numbers Convert 4-bit binary numbers to denary referring to notes for help Confidently convert 4-bit binary numbers to denary Recognise binary and denary numbers Convert 8-bit binary numbers to denary referring to notes for help Confidently convert 8-bit binary numbers to denary Understand that computers are digital	Know the features of a multimedia PPT Analyse a multimedia product to gain an understanding of multimedia structures Consider design plans for your own Multimedia product Understand why companies create effective Logos To be able to create an effective multimedia PPT on your chosen Theme Park Identify what improvements need to be made Work towards improving the Multimedia Product	Be able to describe the two views of software programs; Understand the purpose of functions in Python; Write and test a Hello World program. Understand what variables are and we should name them; Know the difference between a String & Integer Assign values to variables. Understand how the input() function is used Use the input() function as part of a program. Know how to add notes to code; Be able to convert a string to an integer Know how to use the new line character as part of a string;

		networks available, and draw conclusions as to whom would use what and why. Being Safe on the Internet Understand and follow SMART rules when using social networks Describe the benefits of communicating with people online. Understand what type of online programmes/apps could be used in to have a conversation Decide if someone is safe to talk online. Spot the potential signs of grooming.		devices so they use the binary number system Be able to convert a denary number to a binary number To confidently convert denary numbers to binary without any help Understand that computers are digital devices so they use the binary number system Be able to convert a denary number to a binary number To confidently convert denary numbers to binary without any help With some help, add together binary numbers Recall all the rules of binary addition Confidently add together two binary numbers		Understand the purpose of String Concatenation and use it to join strings. Understand the purpose of IF ELSE statements; Be able to use IF ELSE statements to control the flow Plan for the use of the IF, ELSE and OR statements Create a multiple answer quiz using conditional statements
Assessments (formative and summative	**Formative** Observations on task completed Discussion of technology and applications One to one support	**Formative** Observations of do now tasks Questioning	**Formative** Observations of Pseudo code tasks completed Discussions of we do tasks Questioning of: Algorithms Pseudo code	**Formative** Discussion Questioning Completion of task Observations	**Formative** Questioning Q & A on search criteria, fact file, fact to include Observations Completed tasks	**Formative** Questioning Q & A on programming languages Observations Completed tasks

	Peer assessment of task completed. **Summative** Baseline Practical test	Observations of role play activity Discussions in class Questioning during lesson activities Assess PowerPoint that shows the different social networks available by teacher Observations of student tasks Completion of tasks Discussion of video **Summative** Low stake quiz/test Yellow sheet task End of unit test -yellow sheets task	Gaming instructions Peer assessment of algorithms and Pseudo code completed Questioning of Zebra Crossing mimic Observations of working mimic – student task Annotation of Zebra crossing mimic Peer assessment of Zebra Crossing Questioning on sequencing /order – why its important? How sequence is used Flowcharts solution Observations on solutions created, annotations completed Mimic improved and annotated Peer assessment of improved Zebra crossing mimic Questioning – sequencing – bridge light 1 How are the lights controlled? What determines the light timings and flow of traffic? Observations of mimic completed Do now tasks Worksheet answers – peer assessed	Completion of tasks – peer assessment Observations Poster completed Peer assessment of conversions Worked solutions to work set **Summative** Low stake quiz/test End of unit test	Turn and talk observations Peer Feedback Do now Task **Summative** Low stake quiz/test End of unit practical assessment (creation of a multimedia Presentation – assessed against the grading criteria) End of unit exam	Turn and talk observations Peer Feedback Do now Task Peer Feedback Explanation of screenshots **Summative** Low stake quiz/test End of unit practical assessment End of unit exam based on Python

			Mimic annotated – peer assessed Observations of mimic and annotations produced Questioning on bridge light 2 – around sequencing, delays and loops Working solution to the mimic of bridge lights Worksheet answers – peer assessed Mimic annotated – peer assessed Observations of do now tasks Questioning Exit ticket Working solutions to the mimic of lighthouse **Summative** Low stake quiz/test End of unit test			