



Years 7 & 8 Curriculum

	AUT 1	AUT 2	SPR 1	SPR 2	SUM 1	SUM 2
Year 7	<p>7.1 – IT Fundamentals</p> <p>Introduction to IT @ NES Key IT Software Skills including Microsoft Teams and E-Mail File Management Skills eSafety</p> <p>COVID RECOVERY This unit is usually taught in a non-covid year but time being taken cover the key IT fundamental skills whilst assessing the student’s level of IT use.</p>	<p>7.2 – CS Fundamentals</p> <p><u>What is a computer system?</u> Input Devices Output Devices Storage Devices inc. the Cloud</p> <p><u>Data Representation</u> Binary & Denary Numbers Converting to/from Binary Binary Addition</p>	<p>7.3 – Algorithms</p> <p>What is an algorithm? Importance of Instructions Sequence & Selection Flowcharts Written Algorithms</p>	<p>7.4 – Computer Graphics</p> <p>Types of Images – Bitmap vs. Vector Image File Types Pixels and Resolution Quality of an Image</p>	<p>7.5 – Computer Basics</p> <p>History of Computers Computer Science Pioneers Computer Components</p>	<p>7.6 – Computational Thinking</p> <p>Problem Solving Tasks Decomposition Abstraction Pattern Recognition Algorithmic Design</p>
Year 8	<p>8.1 – CS Fundamentals</p> <p>Introduction to IT @ NES Re-cap of Year 7 content.</p> <p>COVID RECOVERY This unit has been developed to re-cap topics covered in Year 7 to help cover any gaps in knowledge because of the issues during Year 7. Students are then assessed on their current understanding of the content at the end of the half term.</p>	<p>8.2 – Programming in Python</p> <p>Introduction to Python Basic Input/Output Data Types Sequence & Selection</p>	<p>8.3 – Spreadsheets</p> <p>Introduction to Microsoft Excel Key Spreadsheet Components Formulae & Functions</p>	<p>8.4 – Memory & Storage</p> <p>Primary Memory (RAM & ROM) Virtual Memory Secondary Storage Devices</p>	<p>8.5 – Networks & Security</p> <p>Types of Networks Security Threats Security Prevention Techniques</p>	<p>8.6 – Augmented Reality</p> <p>Introduction to the concept of Augmented Reality (AR) Designing a basic AR application.</p>

Years 9 – 13 Computer Science Pathway

	AUT 1	AUT 2	SPR 1	SPR 2	SUM 1	SUM 2
Year 9	Data Storage Units of Storage Binary / Denary / Hexadecimal Number Systems Binary Addition & Shifts Character Sets Storage of Images and Sound Compression – Lossy & Lossless COVID RECOVERY Whilst this unit is usually taught in a non-covid year, time is taken to ensure any learning from Year 8 that would aid these topics is addressed.		Primary Storage (Memory) ROM, RAM and Virtual Memory Secondary Storage Optical, Magnetic & Solid State Characteristics – capacity, speed, portability, durability, reliability, and cost.	Networks 1 Types of Network: LAN & WAN Performance of Networks Client-Server vs. Peer-to-Peer Network Hardware Star & Mesh Topologies Wired vs. Wireless Connections	Network Security Forms of Attack (e.g. malware, brute-force, DoS etc.) Common Prevention Methods (e.g. firewalls, passwords, encryption, penetration testing, anti-malware software etc.)	Programming Techniques & Project Consolidation of programming knowledge and applying them within a project context – analysis, design, development, testing and evaluation.
	Programming Fundamentals Use of the Python programming language – developing skills as the year progresses. Knowledge and use of variables, constants, operators, inputs, outputs and assignments, programming constructs, data types. COVID RECOVERY The introduction to Python programming has been adapted due to students not having had any physical experience of using Python in Year 8 – no prior experience is assumed when these skills are first taught.					
Year 10	Year 9 Review Data Storage Primary & Secondary Storage Networks & Security COVID RECOVERY This unit has been developed to re-cap topics covered in Year 9 to help cover any gaps in knowledge because of the issues during Year 9. Students are then assessed on their current understanding of the content at the start of the next half term.	Networks 2 Wi-Fi & Ethernet IP & MAC Addressing Protocols & Layers Packet Switching	Systems Software Operating Systems Utility Software	System Architecture Purpose of the CPU Von Neumann – Registers CPU Components Factors affecting performance Embedded Systems	Boolean Logic Data in binary form Logic Gates Truth Tables Boolean Operators Logical Operators	Programming Techniques & Project Consolidation of programming knowledge and applying them within a project context – analysis, design, development, testing and evaluation.
	Programming Techniques Use of the Python programming language – developing skills as the year progresses. Knowledge and use of variables, constants, operators, inputs, outputs and assignments, programming constructs, data types. COVID RECOVERY The teaching of the Python programming has been adapted due to students not having had much physical experience of using Python in Year 9. A greater emphasis on ‘practical programming’ is being used.					

Year 11	Algorithms Computational Thinking Search Algorithms Sort Algorithms Pseudocode Flow Diagrams	Boolean Logic Data in binary form Logic Gates Truth Tables Boolean Operators Logical Operators	Robust Programming Defensive design considerations Maintainability of code Purpose & Types of Testing Test Data Syntax & Logic Errors Programming Languages & IDEs Levels of Programming Languages Translators IDEs	Systems Software Operating Systems Utility Software Exam Preparation Bespoke revision activities identified for the class. Exam question techniques and practice. COVID RECOVERY The exam preparation sections will be used to continue to address any gaps remaining in knowledge, as identified through practice exams and extensive use of other assessment opportunities.	Exam Preparation Bespoke revision activities identified for the class Exam question techniques and practice.
	Programming Techniques Use of the Python programming language – developing skills as the year progresses. Knowledge and use of variables, constants, operators, inputs, outputs and assignments, programming constructs, data types. Additional techniques: String manipulation, File handling operations, records, SQL, arrays, sub-programs, and random number generation. COVID RECOVERY The teaching of the Python programming has been adapted due to students not having had much physical experience of using Python towards the end of Year 9 and at times in Year 10. A greater emphasis on ‘practical programming’ is being used.				
Year 13	SLR 25 & 26 Part 1 Analysis & Design of Algorithms Big O Notation Complexity of Algorithms Data Structure Algorithms Sort & Search Algorithms SLR 14 Data Structures COVID RECOVERY The teaching plan has been amended to include SLR 14 which was not able to be covered in Year 12.	SLR 7 Programming paradigms Procedural languages Modes of addressing Object-orientated languages SLR 22 Thinking Concurrently SLR 25 & 26 Part 2 Dijkstra’s Shortest Path A* Algorithm	SLR 24 Computational methods Problem recognition Problem decomposition Use of divide and conquer Use of abstraction Backtracking Data mining Heuristics Performance modelling Pipelining Visualisation to solve problems	Exam Preparation Bespoke revision activities identified for the class. Exam question techniques and practice. COVID RECOVERY The exam preparation sections will be used to continue to address any gaps remaining in knowledge, as identified through practice exams and extensive use of other assessment opportunities.	
	Programming Project (20% of final grade) An individual programming project using high level programming languages. Areas covered include: Analysis, Design, Development, Testing and Evaluation.				

Years 9 – 13 IT / Creative iMedia Pathway

* Year 9 IT students are on a newly developed IT qualification whilst Year 10 & 11 students are studying the Creative iMedia course.

	AUT 1	AUT 2	SPR 1	SPR 2	SUM 1	SUM 2
Year 9 IT*	SLR 1 – Design Tools Flow charts Mind maps > Library > Tunnel timeline > Presentation Visualisation diagrams Wireframes	Spreadsheet Skills Microsoft Excel Fundamentals including: <ul style="list-style-type: none"> • Cell Formatting • Sorts & Filters • Cell References • Functions & Formulae • Macros 	SLRs 2 and 3 Human Computer Interfaces in everyday life Data and Testing	Spreadsheet Skills Continued use of Microsoft Excel – developing skills as the year progresses in preparation for the ‘Data Manipulation using Spreadsheets’ unit of work.		Data Manipulation using Spreadsheets Commencing the first Non-Exam Assessment (NEA) unit of work based around the use of Microsoft Excel (carries through to Year 10).
Year 10 iMedia	R088 Exam Board Set Assignment – Digital Sound Sequence Understand the purpose and properties of digital sound. Plan and create a digital sound sequence. Review the digital sound sequence created. COVID RECOVERY This NEA (Non-Exam Assessment) unit would usually be taken in Year 11. However, as students were able to develop the software skills for this unit during Year 9, the units have been swapped to allow students to apply recently gained skills at the start of Year 10 and move the graphics unit to later in the course when sufficient preparation has taken place.		R081 Pre-Production Skills LO1 - Purpose, use and content of: Mood boards, mind maps, visualisation diagrams, storyboards and scripts. LO2 - Client requirements, work plan, research, target audience, hardware, software, health and safety and legal considerations. LO3 – Create pre-production documents and knowledge of file formats and naming conventions. LO4 – Review pre-production documents. COVID RECOVERY Whilst the content of this exam unit was covered throughout Year 9, the plans for this term will enable students to revisit the topics which will appear in their end of year formal exam. Regular assessment opportunities will be used to help students address any gaps in knowledge and understanding whilst also considering exam technique and practice.	R081 Exam (+ Preparation) Bespoke revision activities identified for the class. Exam question techniques and practice.	Digital Graphics Purpose and use of digital graphics. Photoshop software skills and techniques.	
Year 11 iMedia	R088 Exam Board Set Assignment – Digital Sound Sequence Understand the purpose and properties of digital sound. Plan and create a digital sound sequence. Review the digital sound sequence created.		Improvements to R081 (Pre-Production Skills) and R082 (Digital Graphics) Each student will follow a bespoke plan that reflects their current needs to completing the course. COVID RECOVERY As permitted by the exam board, the content required to be assessed has been reduced by 1 unit. Students will therefore have the opportunity to re-visit the Year 10 units of work to address any remaining gaps in knowledge and assessment.			

Year 12 - Level 2 IT	<p>Unit 1 – Essentials of IT Hardware Components – Computer Systems, Networks, Connectivity, Protocols, Fault Diagnosis Software Components – Systems Software, Application Software, Utility Software, Security Installation & Upgrade – Procedures, Health & Safety, Organisational Responsibilities World Wide Web – Use of the Internet, the Cloud, Social Media, Emerging Technologies Benefits if using IT in Business – Operational Activity, Working with Others, Support Business Activities</p> <p>Unit 2 – Essentials of Cyber Security Cyber Security – Definition, Purpose, Importance, Type of Attack/Attacker, Legal Implications Threats & Vulnerabilities – Types of threats and how they can occur, Impacts of an attack Minimise Impacts – Logical & Physical Protection Measures, Organisational Policies</p>		
	<p>Unit 17 – Using Data Analysis Software Data analysis and Microsoft Excel skills in order to undertake the exam board set assignment to: Understand the data used by business. Be able to select and use software to analyse data for business purposes. Be able to present the results of data analysis to the client.</p>		
Year 12 – Level 3 IT	<p>Unit 1 – Fundamentals of IT Computer Hardware Computer Software Business IT Systems Employability and Communication Skills used in an IT Environment Ethical and Operational Issues Threats to Computer Systems</p> <p>COVID RECOVERY Whilst these units are usually taught in a non-covid year, time is taken to ensure any learning from Key Stage 4 that would aid these topics is addressed.</p>	<p>Unit 2 – Global Information Where information is held globally and how it is transmitted The styles, classification, and the management of global information The use of global information and the benefits to individuals and organisations The legal and regulatory framework governing the storage and use of global information The process flow of information The principles of information security</p>	<p>Unit 5 – Virtual & Augmented Reality and Unit 9 – Product Development Commencing the first Non-Exam Assessment (NEA) units of work (carries through to Year 13).</p>