

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7 - Computer Studies						
7 Unplugged (COVID) 2020-2021	<p>Basic Computer safety, use and e-safety (CS, IT, DL) (NC: 9) (delivered to address gaps in knowledge. Use of tablets and not desktops at home and lack of knowledge when students arrive from Primary)</p> <p>Logging in and using the school system Managing files on school network and computer shortcuts? e-safety - Social networking e-safety - Keeping data safe e-safety - How to use and send an email e-safety - How to search the internet effectively Assessment Assessment feedback.</p>	<p>How the internet works? (CS, IT) (9 sessions) (NC: 5)</p> <p>The internet ISP How data travels over the internet Network Protocols Cloud Services Mobile Networks Modern Team working Assessment Assessment feedback</p>	<p>Mini - Creative Data course (L1 to 5) (NC: 7)</p> <p>Brief Introduction to Smart devices What is data and how is it used? How is your data used? How is data visualised? Assessment Assessment feedback</p>	<p>Understanding the impacts of gaming (IT, DL) (10 sessions) (PE - some studies suggest playing video games can improve hand eye coordination and (English - letter and article writing) Psychology - wellbeing and addiction (SMSC: the negative impacts and choosing the right actions when gaming online, links to mental health) (NC: 9)</p> <p>Benefits of gaming Drawbacks of gaming Wellbeing and gaming Hidden gambling in gaming Real life Vs Fantasy How is data used in gaming development? VR and AR development Artificial Intelligence and gaming Assessment Assessment Feedback</p>	<p>Introduction to School System (2 sessions) How to successfully access, navigate and control devices. Skills such as, creating folders, saving, accessing appropriate software and searching the internet.</p>	<p>Small Basic (2 sessions) Introduction to Programming Language (NC: 3)</p> <p>What is small basic? How to use intelligence? Basic code – IF For..EndFor loop</p> <p>This topic supports basic skills to prepare students for when they start learning Python Y8.</p>
7 Computers 2021-2022		<p>Small Basic Introduction to Programming Language (NC: 3)</p> <p>What is small basic? How to use intelligence? Basic code – IF For..EndFor loop</p> <p>This topic supports basic skills to prepare students for when they start learning Python Y8.</p>	<p>How the Internet works (CS, IT) (9 sessions) (NC: 5)</p> <p>The internet ISP How data travels over the internet Network Protocols Cloud Services Mobile Networks Modern Team working Assessment Assessment feedback</p>	<p>Spreadsheet Modelling (NC: 1 and 3) (Business at KS4 Maths and science use formulas)</p> <p>This topic is under review.</p>	<p>Creating Animations (NC: 7) (13 sessions) (IT and DL) (Art - using designs and created sprites that are used within the software)</p> <p>Creating animations (flipbooks) Designing an animation Animation Skills: Movement Shapes Text Bone tool Character development Brush tool Background and stage development Skills recap Assessment Assessment feedback</p>	<p>Creative Data course (6 sessions) (NC: 7) (IT, CS, DL) Science and maths - tables and graph Brief Introduction to Smart devices What is data and how is it used? How is your data used? How is data visualised? Graphs and tables Assessment Assessment feedback What is data? Your data Feedback Lesson GDPR Visual Data IoT Feedback Lesson IoT at home Machine Learning Artificial Intelligence Data Privacy Assessment Assessment Feedback</p>

Athena 7 & 8 - Computer Studies						
	Autumn	Autumn	Spring	Spring	Summer	Summer
7-8 Athena (unplugged) 2020 -2021	<p>Computer Basics and e-safety (NC: 9)</p> <p>(delivered to address gaps in knowledge. Use of tablets and not desktops at home and lack of knowledge when students arrive from Primary)</p> <p>Logging in and using the school system</p> <p>Managing files on school network and computer shortcuts?</p> <p>e-safety - Social networking</p> <p>e-safety - Keeping data safe</p> <p>e-safety - How to use and send an email</p> <p>e-safety - How to search the internet effectively</p> <p>Assessment</p> <p>Assessment feedback.</p>	<p>Computer Developments through War (NC: 9)</p> <p>(link to History, Remembrance Day)</p> <p>The role women played in the development of technology</p> <p>How the Enigma machine was cracked?</p> <p>The development of Colossus</p> <p>How technology has developed through War</p> <p>How VR is used in modern society and in the Armed forces.</p>	<p>Understanding the impacts of gaming (IT, DL) (NC: 9)</p> <p>Benefits of gaming</p> <p>Drawbacks of gaming</p> <p>Wellbeing and gaming</p> <p>Hidden gambling in gaming</p> <p>Real life Vs Fantasy</p> <p>How is data used in gaming development?</p> <p>VR and AR development</p> <p>Artificial Intelligence and gaming</p> <p>Assessment</p> <p>Assessment Feedback</p>	<p>Mini Data</p> <p>What is data</p> <p>Devices that collect data</p> <p>Internet of Things</p> <p>Sensors in smart devices and what they are.</p>	<p>E-safety (IT, DL) (NC: 9)</p> <p>The dangers on the internet, what to look out for and who to.</p> <p>What is phishing and pharming and how to prevent data theft.</p>	<p>Introduction to School System (6 sessions)</p> <p>How to successfully access, navigate and control devices. Skills such as, creating folders, saving, accessing appropriate software and searching the internet safely and appropriately</p> <p>How to use the basic office pages, email and accessing cloud resources? .</p>
7-8 Computers 2021 -2022			<p>Small Basic Introduction to Programming Language (NC: 3)</p> <p>What is small basic?</p> <p>How to use intelligence?</p> <p>Basic code – IF</p> <p>For..EndFor loop</p> <p>This topic supports basic skills to prepare students for when they start learning Python Y8.</p>	<p>How computers work (NC: 5 and 7)</p> <p>What is the difference between hardware and software?</p> <p>What is inside a computer</p> <p>How to select a computer?</p> <p>How to keep your computer safe?</p>	<p>Introduction to Excel (Business at KS4 Maths and science use formulas) (NC: 1 and 3)</p> <p>How to create an excel spreadsheet, use of basic formulae? SUM, MIN, MAX and AVERAGE</p> <p>How to use these formulae to work out real life scenarios, such as buying equipment or a job and how to budget for holidays and household bills.</p>	<p>Creating Animations (NC: 7) (13 sessions) (IT and DL)</p> <p>(Art - using designs and created sprites that are used within the software)</p> <p>Creating animations (flipbooks)</p> <p>Designing an animation</p> <p>Animation Skills:</p> <p>Movement</p> <p>Shapes</p> <p>Text</p> <p>Bone tool</p> <p>Character development</p> <p>Brush tool</p> <p>Background and stage development</p> <p>Skills recap</p> <p>Assessment</p> <p>Assessment feedback</p>

Year 8 - Computer Studies						
<p>8 (unplugged) COVID - 2020-2021</p>	<p>How Computers work (CS, IT) (7 sessions) (NC: 5)</p> <p>Hardware and software Computer specifications Inside a computer Building a computer (new) Operating Systems Computer Security Assessment Assessment feedback</p>	<p>Creative data (CS, IT and DL) - (18 sessions) (Science, maths - visualising data, letter and article writing)) (NC: 7)</p> <p>What is data? Your data Feedback Lesson GDPR Visual Data IoT Feedback Lesson IoT at home Machine Learning Artificial Intelligence Data Privacy Machine Learning Artificial Intelligence Data Privacy Assessment prep Assessment Feedback</p>		<p>How the Internet works (CS, IT) (9 sessions) (NC: 5)</p> <p>The internet ISP How data travels over the internet Network Protocols Cloud Services Mobile Networks Modern Team working Assessment Assessment feedback</p>	<p><u>Understanding the impacts of gaming</u> (IT, DL) (NC: 9)</p> <p>Benefits of gaming Drawbacks of gaming Wellbeing and gaming Hidden gambling in gaming Real life Vs Fantasy Assessment Feedback</p>	<p>Gaming using Python Online software - Programming Language (NC: 3)</p> <p>Syntax and Functions Strings While Loops Feedback Variables Assessment Feedback</p>
<p>8 Computers 2021-2022</p>	<p>Gaming using Python Online software - Programming Language (NC: 3)</p> <p>Syntax and Functions Strings While Loops Feedback Variables Assessment Feedback</p>	<p>Python Programming in IDLE Programming Language (NC: 3)</p> <p>Introduction to Python Variables Numbers Selection Skills Recap Algorithms and sorting techniques While Loops Searching Assessment Feedback</p>	<p>Photoshop Development (IT and DL) Art and Photography (NC: 7)</p> <p>Introduction to PS - Text manipulation Shape manipulation Logo creation Feedback and Vector images 3D shapes How to Quick Selection Assessment Assessment Feedback</p>	<p>Databases (CS, IT and DL) (NC: 1)</p> <p>Introduction to Access Queries in Access Feedback and Lookup Wizard Relational Databases Data Validation Input forms Assessment Assessment Feedback</p>	<p>Creating Video</p> <p>(New unit under development ready for 2021-2022 academic year)</p>	

Athena 8 & 9 - Computer Studies curriculum					
<p>8-9 Athena (unplugged) COVID - 2020-2021</p>	<p>How Computer work (NC: 5 and 7) What is the difference between hardware and software? What is inside a computer How to select a computer? How to keep your computer safe?</p>	<p>Creative data (CS, IT and DL) - (18 sessions) (Science, maths - visualising data, letter and article writing)) (NC: 7) What is data? Your data Feedback Lesson GDPR Visual Data IoT Feedback Lesson IoT at home Machine Learning Artificial Intelligence Data Privacy Machine Learning Artificial Intelligence Data Privacy Assessment Assessment Feedback</p>	<p>Understanding the impacts of gaming (IT, DL) (NC: 9) Benefits of gaming Drawbacks of gaming Wellbeing and gaming Hidden gambling in gaming Real life Vs Fantasy How is data used in gaming development? VR and AR development Artificial Intelligence and gaming Assessment Assessment Feedback</p>	<p>Introduction to School System (2 sessions) How to successfully access, navigate and control devices. Skills such as, creating folders, saving, accessing appropriate software and searching the internet safely.</p>	<p>Gaming using Python Online software - Programming Language (NC: 3) Syntax and Functions Strings While Loops Feedback Variables Assessment Feedback</p>
<p>8-9 Athena Computers 2021-2022</p>	<p>How the Internet works (missed due to COVID) (NC: 5) The internet ISP and selecting ISP How data travels over the internet What is the cloud? Mobile Networks Modern Team working Assessment Assessment feedback</p>	<p>Building websites Introduction to Dreamweaver/Notepad - What is HTML and basic structures (Heading and Paragraphs) How and why do we use HTML to build websites Developing Skills: Colour, Text, backgrounds, tables, hyperlinks, images and video embedding. Assessment: Develop a website for a specific purpose Feedback</p>	<p>Photoshop Development (IT and DL) Art and Photography (NC: 7) Introduction to PS - Text manipulation Shape manipulation Logo creation Feedback and Vector images 3D shapes How to Quick Selection Assessment Feedback</p>	<p>Creative Programming using Code Combat Online software - Programming Language (NC: 3) Syntax and Functions Strings While Loops Feedback Variables Assessment Feedback</p>	<p>How to use Microsoft Excel (missed due to COVID) formulae (basic IF, SUM, MAX, MIN, COUNT, Lookup) and decision making, (KS3) How to use processing methods (filtering, cell referencing, macros, linking worksheets How to present data through the use of: Graphs, pivot tables, formatting and selecting data.</p>

Year 9 - Computer Studies						
<p>9 (unplugged) COVID - 2020-2021</p>	<p>Living in a Digital World (business studies) (SMSC: Legislation; computer misuse act and GDPR and implications of computer threats) (NC: 9)</p> <p>Online Communication - links to social media use Implications of accessing the internet - e-safety e-commerce and VLE Online Services Feedback and File Control Google Docs Bandwidth and ISP selection - links to 'how the internet works' Threats to Computer Data - Prevention Threats What is Data Protection? Operating Systems OS utilities. Assessment Feedback</p>		<p>Business 'Music Festival' (business studies)</p> <p>Introduction & Innovation Environmental concerns Ethics and corporate responsibility Business plans Segmentation Marketing and promotion Market research Budgeting and finances Stakeholders Legislation Logistics Review lesson Assessment</p>	<p>Understanding the impacts of gaming (IT, DL) (10 sessions)</p> <p>(PE - some studies suggest playing video games can improve hand eye coordination and (English - letter and article writing) (SMSC: the negative impacts and choosing the right actions when gaming online, links to mental health) (NC: 9)</p> <p>Benefits of gaming Drawbacks of gaming Wellbeing and gaming Hidden gambling in gaming Real life Vs Fantasy How is data used in gaming development? VR and AR development Artificial Intelligence and gaming Assessment Assessment Feedback</p>	<p>Creative data (CS, IT and DL) - (18 sessions) (Science, maths - visualising data, letter and article writing)) (NC: 7)</p> <p>What is data? Your data Feedback Lesson GDPR Visual Data IoT Feedback Lesson IoT at home Machine Learning Artificial Intelligence Data Privacy Machine Learning Artificial Intelligence Data Privacy Assessment Feedback</p>	<p>Website development Programming Language (NC: 3)</p> <p>Introduction to Dreamweaver/Notepad - What is HTML and basic structures (Heading and Paragraphs) How and why do we use HTML to build websites Developing Skills: Colour, Text, backgrounds, tables, hyperlinks, images and video embedding.</p>
<p>9 Computers 2021-2022</p>	<p>Python Programming (Missed to COVID) (NC: 3) Programming Language Introduction to Python Variables Numbers Selection Skills Recap Algorithms and sorting techniques While Loops Searching Assessment Feedback</p>	<p>Living in a Digital World (business studies) (SMSC: Legislation; computer misuse act and GDPR and implications of computer threats) (NC: 9)</p> <p>Online Communication - links to social media use Implications of accessing the internet - e-safety e-commerce How the cloud works Bandwidth and ISP selection - links to 'how the internet works' Threats to Computer Data - Prevention Threats What is Data Protection? Operating Systems</p>	<p>Website Development (CS, IT) (12 sessions) Programming Language (NC: 3)</p> <p>Introduction to Dreamweaver/Notepad - What is HTML and basic structures (Heading and Paragraphs) How and why do we use HTML to build websites Developing Skills: Colour, Text, backgrounds, tables, hyperlinks, images and video embedding. What is CSS and how do we use it? Assessment: Develop a website for a specific purpose Feedback</p>			

Key Stage 4 - BTEC in Digital Information Technology (Edexcel)					
10 ICT 2020- 2021	<p>Topic Focus: Modern Technology (IT) (14 sessions) (builds on skills from: basic computer and e-safety, how computers work and creative data) (NC 4.1 and 4.3)</p> <p>What are communication technologies? What is Cloud Storage and how and why cloud technologies are used Comparison of Paid vs free applications and understanding the role of synchronisation. Modern Team working - why and how? Benefits and drawbacks of it, 24/7/365 multicultural Inclusivity and Accessibility- interface design, accessibility features and flexibility. Impacts of modern technology and how modern technology impacts on organisations and individuals Assessment Feedback</p>	<p>Topic focus: Cyber Security (12 sessions) (NC 4.3)</p> <p>Why are computer System attacks and external threats - why people hack and the threats. What are the internal threats and what is the impact of breaches? Why do different users access have different restriction when using a computer system or device. : locks, passwords, levels of permitted access, biometrics and two-factor authentication What are the data system protection methods - firewalls, anti-virus software, device hardening and encryption? How do we find weaknesses and improving system security: ethical hacking, penetration testing and analysing system data? What happens at policy level to protect systems? What are security policies: who takes responsibility and how to plan for disaster recovery Why do we have policies, backups and data recovery in place? - disaster recovery, legal requirements and professional guidelines password and policies. What are the steps to take place after a disaster? Feedback</p>	<p>Topic Focus: The wider implications of digital systems (14 sessions) (NC 4.3)</p> <p>Why do we share data: focuses on benefits, drawbacks and responsible use? How does technology impact the environment: What can be done to reduce these? upgrading/replacing digital systems and usage of settings policies Accessing information and services: benefits to organisations, individuals and society Why do we have to follow legal requirements and professional guidelines when designing websites and making content accessible? How does net neutrality work and how does it impact organisations Why do we have Acceptable use policies? Data Protection Act (GDPR) Data and the use of the internet: right to be forgotten, appropriate legal use of cookies and other transaction data Investigation in to the data protection principles: for example, relevant data is collected, accuracy of data, only kept as long as needed, data subject rights and transferring data to other countries What is Intellectual property? How do criminals use computer systems to gain: unauthorised access/modification, creation of malware and intentional spreading of malware</p>	<p>Topic Focus: - Developing and Reviewing User Interface - (NC 4.3)</p> <p>Designing of interface uses drawing skills related to art)</p> <p>Project management techniques: methodologies: waterfall, agile and iterative: Presenting: GANT, PERT and critical path Basic project planning tools: task lists, graphical descriptions, written descriptions and mood boards Planning the project basics: aims and objectives, audience and purpose Project constraints and risks How to use design techniques to: create storyboards and sketches? How and why to use a testing strategy</p>	
Y11 - ICT 2021- 2022	<p>Topic Focus: Planning and communication in digital systems (6 sessions)</p> <p>Exploring how data flow diagrams, Flow charts, System diagrams are used in the ICT world</p> <p>Investigate how forms of notation are used to interpret/create data flow diagram and flowcharts</p>	<p>Topic Focus: Create a dashboard using data manipulation tools (students develop skills from creating PowerPoint presentation in KS3) (Using Formula in ICT that uses similar constructs to mathematical equations) (NC 4.2)</p> <p>What is data and information:</p>	<p>Topic Focus: Investigate user interface design for individuals and organisations (Business studies SMART and Project Planning techniques)</p> <p>What are UI? What is a Complex UI? How and why and Software UI Accessibility needs</p>	<p>Topic Focus: the role and impact of using data on individuals and organisations</p> <p>How to create a dashboard using data manipulation skills (importing, text to columns formulae (basic IF, SUM, MAX, MIN, COUNT, Lookup) and decision making, (KS3)</p> <p>How to use processing methods (filtering, cell referencing, macros, linking worksheets</p> <p>How to present data through the use of: Graphs, pivot tables, formatting and selecting data. Mock assessment</p>	<p>Revision of common misconceptions and emerging needs</p> <p>Most common misconceptions are:</p> <ul style="list-style-type: none"> • Cloud storage and cloud computing • Security policies • Data flow diagrams

		<p>How to present information through the use of text, numbers, tables, graphs/charts and infographics</p> <p>How do we check data for reliability and suitable for processing: validation: range, type, look up, presence and length checks and verification: proofreading and double entry? Who collects data and why do they collect data? data collection methods, data collection features and big data</p> <p>Why quality data is important with an investigation to the source, accuracy, age, completeness, amount of detail, format/presentation and volume</p> <p>Who uses data modelling: types of sectors and data modelling in decision making</p> <p>What are the threats to data collection? privacy, fraud, targeting vulnerable groups and inaccurate data</p> <p>Learning aim A: assessment practice</p>	<p>User skills need to access systems. Design Principles that are need to ensure all users can access systems.</p>	<p>Feedback Actual Assignment. Topic Focus: C - Draw conclusions and review data presentation method (conclusions - Science)</p> <p>Drawing conclusion based on data Investigation of how presentations can affect understanding of data. (biased and misinterpreted)</p>	<ul style="list-style-type: none"> Data protection Intellectual property
<p>Current Y11 ICT 2020-2021</p>	<p>Investigate the role and impact of using data on individuals and organisations</p>	<p>Recap of Modern Technology and Cyber Security</p>	<p>(February exam cancelled due to pandemic)</p> <p>Component 2 - Create a dashboard using data manipulation tools (Using Formula in ICT that uses similar constructs to mathematical equations)</p> <p>Component 2 - Draw conclusions and review data presentation method</p> <p>Component 3 - Recap of The wider implications of digital systems</p> <p>Changed to Component 3 -due to access of technology for students</p>		<p>Component 3 - Revision (Planning and communication in digital systems (Mocks suggest this is an area students do not perform well on)</p>

Athena and Eleos - Key Stage 4 - Functional Skills ICT

<p>10-11 Athena / Eleos 2020-2021</p>	<p>How Computers work (NC 4.3)</p> <p>Open and saving files Inserting and removable media and security issues associated with it Understanding how to stay safe on the internet and respecting others beliefs. How to print screen How to search the internet, select and reuse information for a required purpose? Computer and web security</p>	<p>Spreadsheet development (NC 4.1)</p> <p>basic formulae: SUM, Lookup and IF statements. How to use pre-populated data Formatting techniques</p>	<p>Using Microsoft Word Effectively (NC 4.1)</p> <p>Inserting graphics and content to create digital products and selecting information to create digital products such as newsletter, posters and advertisements.</p>	<p>Using PowerPoint effectively (NC 4.1)</p> <p>Inserting graphics and content to create digital products and selecting information to create digital products such as PowerPoints that advertise for a specific purpose.</p>	<p>Emails (NC 4.1 and 4.3)</p> <p>Email etiquette Sending/receiving/deleting emails Attachments Contacts</p>	<p>Prep for assessment</p> <p>Recapping: Spreadsheets Creating Word documents; such as: Newsletters, Posters, PowerPoints and selecting information.</p>
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Key Stage 4 GCSE Computer Science (OCR) J276 (2021) and J277 (2022)						
10 CS	<p>Topic focus: System Security, CPU, Memory and Storage and the Internet</p> <p>Recap Networks/topologies/protocols (NC: 5 and 6) (NC 4.1) <i>(Carries on from topics that were taught before first lockdown)</i></p> <p>What is the architecture of the CPU?</p> <p>How does a CPU perform? And what are the impacts of it?</p> <p>What and how are embedded systems used</p> <p>What is Primary & Secondary Storage and what is the difference?</p> <p>What role do Networks & Topologies play in the Internet and connecting to the internet?</p> <p>How do Wired & Wireless networks work, communicate through protocols and how do the models work?</p> <p>What are the main Threats & Prevention methods to a computer system?</p>	<p>Topic focus: Data representation and system software (NC 4.1 and 4.2) <i>(System Security Y8)</i> <i>(SMSC links to real life scenarios, cyber-crime & security)</i></p> <p>What are units of data storage measured in? . How to convert data Binary, Binary shifts, overflow data, denary and hexadecimal Character sets, images and sound conversion Why do we have compression (Lossless, Lossy) and why it is needed? What is the purpose and functionality of Operating Systems? How are UI controlled and what are the input/process and output methods? What Utility software does an OS have, what is purpose and functionality (Encryption, defragmentation and data compression)</p>	<p>Topic focus: Ethical, Legal, Cultural and Environmental concerns <i>(SMSC links and informs students about decisions they can choose to make, relating also to laws ad legislations put in place)</i> (NC 4.1 and 4.3)</p> <p>What is the Impacts of digital technology on wider society? Ethical issues Legal issues Cultural issues Environmental issues Privacy issues What are the computer laws and how legislation deter computer misuse? What is the data protection act 2018 (GDPR) What is the Computer Misuse Act 1990? What is Copyright Designs & patents act 1988? What are Software licenses (open source & proprietary) and how can we use them?</p>	<p>Closing the Gap (areas that need to be developed)</p> <p>Based on feedback, mini assessments, knowledge quiz and MAP</p>	<p>Topic focus: Computational thinking and algorithms (NC: 3 and 4) (NC: 4.2) <i>(Maths, use of operators & variables etc.)</i> <i>(Python Y8 & Y9)</i> <i>(Small Basics Y7)</i> <i>(SMSC link to how programming should be constructed legally & lawfully)</i></p> <p>How can we think computationally? (What are Algorithms, Abstraction, Decomposition & Pattern Recognition)</p> <p>Identify the inputs, processes and outputs for a program</p> <p>Create and understand Pseudocode, flowcharts and reference high level programming language</p> <p>Problem solve to identify common errors (Syntax & Logic errors) and suggest how to fix</p>	<p>Topic focus: Programming computational logic (NC: 4) (NC: 4.2) <i>(Maths, use of operators & variables ect.)</i> <i>(Python Y8 & Y9)</i> <i>(Small Basics Y7)</i> <i>(SMSC link to how programming should be constructed legally & lawfully)</i></p> <p>Searching & sorting algorithms</p> <ul style="list-style-type: none"> • Binary search • Linear Search <p>Standard sorting algorithms</p> <ul style="list-style-type: none"> • Bubble sort • Merge sort • Insertion sort <p>Programming fundamentals <i>(Links to previous topic, expands on this)</i></p> <ul style="list-style-type: none"> • The use of variables, constants, operators, inputs, outputs and assignments • The use of the three basic programming constructs 'Sequence, Selection, Iteration' • Arithmetic operators • Boolean operators AND, OR and NOT • Data Types and casting • String manipulation • File handling • Use of records • Use of SQL • Use of arrays • Sub programs & random number generation •

<p>11 CS 2020-2021</p>	<p>Data representation and system software (NC 4.1 and 4.2) (System Security Y8) (SMSC links to real life scenarios, cyber-crime & security)</p> <p>What are units of data storage (Capacity & Capacity requirements. How to convert)</p> <p>What is data storage, Binary, Binary shifts, overflow, denary and hexadecimal</p> <p>Why do we think about?</p> <ul style="list-style-type: none"> • character sets, images and sound conversion • Compression (Lossless, Lossy and why it is needed) • Operating Systems (Purpose & Functionality, user interface, memory management, file management peripheral management, user management and multitasking) • Utility software purpose and functionality (Encryption, defragmentation and data compression) 	<p>Recapping Paper 1 and 2 (Carries on from topics that were taught before first lockdown)</p> <p>What is the architecture of the CPU How does the CPU perform What are embedded systems</p> <p>What are Primary & Secondary Storage and what is the difference?</p> <p>Networks & Topologies</p> <p>What are the different threats & how do we prevent them on a computer system</p>	<p>Recapping Paper 1 and 2 (Link to previous knowledge)</p> <p>Ethical, Legal, Cultural and Environmental concerns (SMSC links and informs students about decisions they can choose to make, relating also to laws and legislations put in place) (NC 4.1 and 4.3)</p> <p>How does the use of digital technology impacts on wider society? With a focus on the</p> <ul style="list-style-type: none"> • Ethical issues • Legal issues • Cultural issues • Environmental issues (recycling and re-using) • Privacy issues • Legislations relevant • The data protection act 2018 (GDPR) • Computer Misuse Act 1990 • Copyright Designs & patents act 1988 <p>Software licenses (open source & proprietary)</p>	<p>Recapping Paper 1 and 2 (Link to previous knowledge)</p> <p>Computational thinking and algorithms (NC: 3 and 4) (NC: 4.2) (Maths, use of operators & variables.) (Python Y8 & Y9) (Small Basics Y7) (SMSC link to how programming should be constructed legally & lawfully)</p> <ul style="list-style-type: none"> • Principles of computational thinking (Algorithm, Abstraction, Decomposition & Pattern Recognition) • Identify the inputs, processes and outputs for a program • Create and understand Pseudocode, flowcharts and reference high level programming language • Identify common errors (Syntax & Logic errors) and suggest how to fix • Flowchart symbols • Variables & Constants • IF Statements • Create and use trace tables to follow an algorithm 	<p>Recapping Paper 1 and 2 (Link to previous knowledge)</p> <p>Programming computational logic (NC: 4) (NC: 4.2) (Maths, use of operators & variables ect.) (Python Y8 & Y9) (Small Basics Y7) (SMSC link to how programming should be constructed legally & lawfully)</p> <p>Searching & sorting algorithms</p> <ul style="list-style-type: none"> • Binary search • Linear Search <p>Standard sorting algorithms</p> <ul style="list-style-type: none"> • Bubble sort • Merge sort • Insertion sort <p>Programming fundamentals (Links to small basic, Python and HTML, expands on this)</p> <ul style="list-style-type: none"> • The use of variables, constants, operators, inputs, outputs and assignments • The use of the three basic programming constructs 'Sequence, Selection, Iteration' • Arithmetic operators • Boolean operators AND, OR and NOT • Data Types and casting • String manipulation • File handling • Use of records • Use of SQL • Use of arrays
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Key Stage 4 GCSE Business Studies (Edexcel)					
Y10 BUS	<p>1.4 Making the business effective Computing- E-commerce (Y9AU) Art- Research (Y8SP) 1.4.1 The options for start-up and small businesses</p> <ul style="list-style-type: none"> • Ownership • Franchises <p>1.4.2 Business location 1.4.3 The marketing mix</p> <ul style="list-style-type: none"> • Product • Price • Place • Promotion • Differentiation <p>1.4.4 Business plans</p>	<p>1.5 Understanding external influences on business Geography- Earning a living (Y7,8,9 SU) RE- Human rights (Y9AU) Computing- E-commerce (Y9AU) Geography- UK economy (Y10SP) English- Power and Conflict (Y10S) 1.5.1 Business stakeholders 1.5.2 Technology and business 1.5.3 Legislation and business</p> <ul style="list-style-type: none"> • Consumer • Employee <p>1.5.4 The economy and business</p> <ul style="list-style-type: none"> • Business Cycle • Exchange Rates <p>1.5.5 External influences</p> <ul style="list-style-type: none"> • SWOT 	<p>2.1 Growing the business Geography- UK economy (Y10SP) Geography- Global fashion (Y7AU, Y8 SP) RE- Ethics (Y8 SP) Computing- Ethics (Y10SU) 2.1.1 Business growth</p> <ul style="list-style-type: none"> • Organic • Inorganic • Financing <p>2.1.2 Changes in business aims and objectives 2.1.3 Business and globalisation 2.1.4 Ethics, the environment and business</p> <ul style="list-style-type: none"> • Ethics • Pressure Groups • Environment • Government 	<p>2.2 Marketing Decisions English- Power and Conflict (Y10S) 2.2.1 Product 2.2.2 Price 2.2.3 Promotion 2.2.4 Place 2.2.5 Using the marketing mix to make business decisions</p>	<p>Revision and practice assessments Emerging needs and misconceptions</p>
Y11 BUS	<p>2.3 Operational Decisions Geography- Resources management (Y9 SU) Computing- Databases (Y8SU) Geography- Resources management (Y10AU) 2.3.1 Business operations</p> <ul style="list-style-type: none"> • Operations • Stock • Technology <p>2.3.2 Working with suppliers 2.3.3 Managing quality 2.3.4 The sales process</p>	<p>1.3 Finance recap (needs to be built on before 2.4) 2.4 Making Financial Decisions Computing- Spreadsheets (Y7SU) Maths- Percentages (Y7SP & 8,9AU) Maths- Graphs (Y11SP) 1.3 Revenues, costs and profits 1.3 Cash flow 1.3 Breakeven 2.4.1 Business calculations</p> <ul style="list-style-type: none"> • Gross Profit • Net Profit • ARR <p>2.4.2 Understanding business performance</p>	<p>2.5 HR Decisions English- Power and Conflict (Y10S) 2.5.1 Organisational structures 2.5.2 Effective recruitment 2.5.3 Effective training and development 2.5.4 Motivation</p> <ul style="list-style-type: none"> • Communication 	<p>2.2 Marketing Decisions] English- Power and Conflict (Y10S) 2.2.1 - Product 2.2.2 Price 2.2.3 Promotion 2.2.4 Place 2.2.5 Using the marketing mix to make business decisions</p>	<p>Revision and Interventions Emerging needs and misconceptions</p>

Dark Green = Subject Links

Red = Previous learning links

Orange = SMSC links

Key stage 1 National Curriculum

<u>Strand of KS1 National Curriculum</u>	<u>Description of Strand</u>
<u>1.1</u>	understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
<u>1.2</u>	create and debug simple programs
<u>1.3</u>	use logical reasoning to predict the behaviour of simple programs
<u>1.4</u>	use technology purposefully to create, organise, store, manipulate and retrieve digital content
<u>1.5</u>	recognise common uses of information technology beyond school
<u>1.6</u>	use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

<u>Strand of KS2 National Curriculum</u>	<u>Description of Strand</u>
<u>2.1</u>	design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
<u>2.2</u>	use sequence, selection, and repetition in programs; work with variables and various forms of input and output
<u>2.3</u>	use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
<u>2.4</u>	understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
<u>2.5</u>	use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
<u>2.6</u>	select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
<u>2.7</u>	use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Key Stage 3 - National Curriculum

<u>Strand of KS3 National Curriculum</u>	<u>Description of Strand</u>
1	design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
2	understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
3	use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions

4	understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
5	understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
6	understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
7	undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
8	create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
9	understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

National Curriculum for Computer Science and ICT

All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All pupils should be taught to:

Strand of KS4 National Curriculum	Description of Strand
4.1	develop their capability, creativity and knowledge in computer science, digital media and information technology
4.2	develop and apply their analytic, problem-solving, design, and computational thinking skills
4.3	understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns