

Key Stage 3: Year 7-9

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
Year 7	Knowledge	<p>7.1 Introduction to ICT and accessing Office 365</p> <ul style="list-style-type: none"> • Introduction to Office 365 • Navigation through Apps available to students for using Office 365 • Introduction to emails • Accessing Satchel One for Homework <p>7.1 Skills audit and Baseline</p> <ul style="list-style-type: none"> • Audit of ICT skills • Searching the Internet • Using keywords to find information on the internet <p>7.2 Music Festival Research</p> <ul style="list-style-type: none"> • How to layout and present work • Formatting skills • Referencing information 	<p>7.3 Logos in Fireworks</p> <ul style="list-style-type: none"> • Formatting images • Manipulating colours • Layering images <p>7.4 Internet Safety</p> <ul style="list-style-type: none"> • Online line safety and how to keep safe • Privacy setting • How to report abuse • Looped PowerPoint on how to keep safe 	<p>7.5-7.6 Scratch</p> <ul style="list-style-type: none"> • Introduction to Scratch • Flow charts • Feeding time game – IF statement, countdown timer • Pac Man – IF statements, loop, lives, timer 	<p>Students will first learn how to use the school system and access Home learning if this would be required.</p> <p>Students then build up their skills to confidently use the internet to carry out research and format the work into a report in Word.</p> <p>Creativity skills in Fireworks and PowerPoint will be developed, as will learning about internet safety and how to keep safe online.</p> <p>Finally, students will develop coding skills using Scratch to build on the basic skills learnt in primary school.</p>
	Skills	<p>Students will learn how to use and access the school network and how to access work from home.</p> <p>Report writing skills and layout formatting in Word.</p>	<p>Students will learn the basic skills in graphic design using Adobe Fireworks</p>	<p>Students will learn to code using blocks in Scratch they will create basic games with support. Then develop their own coding skills to create a Pac Man game.</p>	
Year 8	Knowledge	<p>8.1 -8.2 Text Based Game</p> <ul style="list-style-type: none"> • Flow Charts and design plans • Hyperlinks in PowerPoint • Animation • Master Slides • Layouts • Sounds 	<p>8.3-8.4 Magazine - Fireworks</p> <ul style="list-style-type: none"> • Visualisation diagrams • Formatting images and removing backgrounds • Layering photos • Manipulating colours • Layering images 	<p>8.5 Spreadsheets</p> <ul style="list-style-type: none"> • Entering Data • Formatting data • Creating formulas and functions • Creating graphs <p>8.6 Internet Safety</p> <ul style="list-style-type: none"> • Online line safety and how to keep safe • Recap Privacy setting and how to report abuse • Create a Comic strip in Pixton 	<p>Building on the basic skills in PowerPoint, students will develop further skills such as animation, sounds and hyperlinks to create a website in PowerPoint.</p> <p>The basic Fireworks skills from Year 7 will be developed further. Students will use the complex tools in Fireworks to manipulate text, images and use layering to develop a Magazine cover.</p> <p>Skills in spreadsheet will be taught on how to input, format and manipulate data in Excel to ensure student have skills in all Microsoft packages.</p> <p>Continuing from introduction to internet safety in Year 7, students will look at other aspects of internet safety and ensure they know how to stay safe on social media.</p>
	Skills	<p>Students will learn how to create a master slide and set up a template in PowerPoint. Skills in adding images, text, animations, sounds and hyperlinks will be developed.</p>	<p>Students will learn how to manipulate images and text using Adobe Fireworks.</p>	<p>Students will learn how to input data and create formulas and functions to complete tasks in Excel.</p>	
Year 9	Knowledge	<p>9.1 – 9.2 Flash animation</p> <ul style="list-style-type: none"> • Creating animation using Flash • Creating frames • Tweens • Loops • Layers 	<p>9.3 Premiere</p> <ul style="list-style-type: none"> • Creating video clips • Video editing • Merging clips • Adding sounds and title • Manipulating colours <p>9.4 Hardware and Software</p> <ul style="list-style-type: none"> • Internal and external hardware • Input and output devices 	<p>9.5-9.6 Dreamweaver</p> <ul style="list-style-type: none"> • Setting up pages • Rollover images • Google maps • Hyperlinking pages • Adding animations • HTML codes • Style sheets 	<p>Students will work on Adobe Flash using similar tools as Fireworks from Year 7 and 8. They will learn how to create animations and edit movies which will lead into creating a website in year.</p> <p>Hardware and software will look at how computers work and how we input and output information.</p> <p>Creating a website will include using skills from Year 8 like layout, hyperlink and sound, whilst also</p>

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SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
			<ul style="list-style-type: none"> Peripherals Different software Binary 		incorporating skills from Flash and Premiere to create the site.
	Skills	Students learn how to create their own animation by drawing, moving and fine turning frames and tweens in Adobe Flash.	Student will develop skills in Premiere to create their own clips using raw footage to cut, manipulate, add music, titles and effects.	Students will learn the skills to set up a template, add images, google maps and hyperlinks their website. They will learn specific HTML codes as well as CSS.	

Key Stage 4: Year 10-11 (iMedia)

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
Year 10 iMedia	Knowledge	10.1 – 10.2 RO81 – Exam unit Introduction to the course and the units that will be covered in their GCSE. Ro81 Exam, RO82 Digital Graphics, RO85 Websites and RO87 Multimedia product Students will focus on the exam unit first. Areas that will be covered are <ul style="list-style-type: none"> File Formats Target audience Mood boards Visualisation diagrams Storyboards Visualisation diagrams Scripts Hardware and Software Workplans Copyright Secondary Research Health and Safety 	10.3 RO82 – Digital Graphic LO1 – Students will research what digital graphics and create a report. The report will include the <ul style="list-style-type: none"> Different types of graphics that are How graphics are used to attract their target audience Different file formats Lossy and lossless images Resolutions How files are saved and why they are saved in different formats e.g. for internet usages, printing etc LO2 Planning and Pre-production Students will interpret the client’s requirement from the exam brief. This section will require a written report about <ul style="list-style-type: none"> What the client wants A work plan Mood board Visualisation diagram Assets table of images Hardware and software required Legislation – Copyright, Creative commas 	10.5 RO82 – Digital Graphic LO4 – Evaluation After creating the final document student will reflect on their design and evaluate their work. This will involve looking at <ul style="list-style-type: none"> If they have fulfilled the client brief Successes in their work Areas they would change if they did it again 10.6 RO85 – Websites LO1 – Students will a research report looking at <ul style="list-style-type: none"> Purpose of websites What website have in common Different functions on website Devices that can be used to access the internet Different internet connections 	Students will first learn the basics of iMedia recapping some of the knowledge and skills from KS3. The exam unit builds up the skills ready to apply them to the coursework units. The Digital Graphics builds on the skills learnt in KS3 and the exam unit skills to develop a vinyl cover in Fireworks. All knowledge learnt in R081 will be applied to LO1 & LO2 of the coursework.

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
	Skills		Skills <ul style="list-style-type: none"> Report writing in Word Understanding a client brief Internet Research Manipulating images and text in Fireworks to create a vinyl cover 	Skills <ul style="list-style-type: none"> Report writing in Word Internet Research 	
Year 11 iMedia	Knowledge	<p>11.1 R085 – Websites LO2 – Planning and Pre-production Students will interpret the client’s requirement from the exam brief. This section will require a written report about:</p> <ul style="list-style-type: none"> What the client wants The target audience for the website A work plan Mood board Site Map Visualisation diagram Assets table of images Hardware and software required Legislation – Copyright, Creative commas Set up a test plan for the website to check the features <p>11.2 R085 – Websites LO3 – Creation This will involve the students creating a Website for a Travel blog from the client’s requirements in LO2. Students will use their plans from LO2 to make their final design. This task will involve using Dreamweaver software to create a website and use skills for:</p> <ul style="list-style-type: none"> Setting up a template Creating a logo Adding images and rollover images Adding animation Embedding map Hyperlinking emails Creating a navigation system <p>LO4 – Evaluation After creating the final document student will reflect on their design and evaluate their work. This will involve looking at:</p> <ul style="list-style-type: none"> If they have fulfilled the client brief Successes in their work Areas they would change if they did it again 	<p>11.3 R087 – Interactive Multimedia product LO1 – Students will research what interactive multimedia product are and create a report. The report will include:</p> <ul style="list-style-type: none"> Different multimedia product such as information screens, touch screen information stations etc Different hardware and software that is required Internet connections Bandwidth and data transfer File formats <p>11.4 R087 – Interactive Multimedia product LO2 – Planning and Pre-production of interactive multimedia products Students will interpret the client’s requirement from the exam brief. This section will require a written report about:</p> <ul style="list-style-type: none"> What the client wants Target audience for the product A work plan Mood board Mind maps Visualisation diagram Assets table of images Hardware and software required Legislation – Copyright, Creative commas <p>LO3 – Creation Create the multimedia product from the client requirements planned in LO2:</p> <ul style="list-style-type: none"> Setting up a master slide Adding images Adding animation Embedding videos Hyperlinking Creating a navigation system 	<p>11.5 R087 – Interactive Multimedia product LO3 Continued</p> <p>LO4 – Evaluation After creating the final document student will reflect on their design and evaluate their work. This will involve looking at:</p> <ul style="list-style-type: none"> If they have fulfilled the client brief Successes in their work Areas they would change if they did it again 	Students will use knowledge learnt in KS3 to develop a Website for a Travel Blog. This will build on skills from KS3 and the exam. All knowledge learnt in R081 will be applied to LO1 and LO2 of the coursework.

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SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
		RO81 Exam preparation for January resits Recap exam theory ready for the resits all areas from Year 10 and Year 11 will be recapped before the exam.			
	Skills	<ul style="list-style-type: none"> Report writing in Word Understanding a client brief Internet Research Skills in Dreamweaver 	<ul style="list-style-type: none"> Report writing in Word Understanding a client brief Internet Research PowerPoint skills 	<ul style="list-style-type: none"> Report writing in Word 	

Key Stage 4: Year 10-11 (GCSE Business)

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
Year 10 GCSE Business	Knowledge	<p>10.1 -2 Unit 1.1 – Business activities Introduction to the course and the content that will be covered during the course.</p> <p>During this term student will be learning about:</p> <ul style="list-style-type: none"> Enterprise and Entrepreneurs The role of Business Business planning Different types Business ownership <ul style="list-style-type: none"> Sole Traders Partnerships Franchise Limited Companies Public Limited Companies The Pros and cons for each type of business ownership Explain why business have different types of business ownership Understand the aims and objectives of business and how they change over time Business Growth Stakeholders in a business and the impact they have <p>During this term students will also set up their own business and take part in the IKIC competition. This allows students to run their own business in school and applying their learning to a real-life situation. Students will have the opportunity to sell their items in school and at local events set up by the IKIC competition.</p> <p>End of unit assessment for 1.1 will be sat</p>	<p>10.3-10.4 Unit 1.2 – Marketing Introduction to marketing:</p> <ul style="list-style-type: none"> What the role of Marketing is in a business Primary and secondary methods of research Qualitative and quantitative research Market segmentation Market mapping Product life cycle The 4 P's – Price, place, product and promotion The marketing mix and why it is important <p>During this term for the IKIC competition students will carry out primary and secondary research for their business idea. This will allow them to analysis their findings to make decision for their business. Using this information, they will develop their business idea and create promotional materials to advertise their business in preparation for the Easter Fayre.</p> <p>End of Unit 1.2 will be assessed with elements from Unit 1.1</p>	<p>10.5 Unit 1.3 – People Introduction to Human resources in a business this will cover:</p> <ul style="list-style-type: none"> The role of Human Resources How business plan for the human resources required Organisational structures – Hierarchy in a business and the difference between tall and flat structures <p>10.6 Unit 1.3 - People</p> <ul style="list-style-type: none"> Communication in a business Recruitment and selection. This will include students completing an application form, writing a cover letter and interviewing for a job Laws linked to recruitment Maslow's hierarchy of needs Different methods of motivation <ul style="list-style-type: none"> Financial Non-financial Training and development using on the job, off the job and induction training <p>End of unit 1.3 will be assessed</p> <p>This term students will sit a practice Unit 1 exam paper</p>	<p>The Business content follows a logical path by first developing knowledge of why businesses exist, the different methods of ownership and growth. This progresses on to learning how businesses can market and advert themselves to get bigger. Then we look at Human Resources and how businesses can recruit staff as they get bigger.</p> <p>During Year 10, in order to embed knowledge, students will be able to get involved in setting up their own business and developing Marketing materials.</p>

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SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
	Skills				
Year 11 GCSE Business	Knowledge	<p>11.1 Unit 2.1 Production Students will start this year by completing a baseline assessment to check their learning from Year 10 before starting Unit 2.</p> <p>The production unit will cover:</p> <ul style="list-style-type: none"> • Different production methods used in a business: Batch, Flow, Job • How technology and the introduction of machinery as influenced production • How business check the quality for the products by either using Quality control or Quality assurance • Understand and analyse the different between QA and QC • How product recall can impact a business and why the quality is important to ensure no recalls are required • Sales and customer service • Customer services and aftersales • How companies look after their customers • Consumer Laws and the rights that customer have • Location of business and the factors that influence the location of business • The supply chain <p>11.2 Unit 2.2 Finance</p> <ul style="list-style-type: none"> • The role of finance in a Business • Sources of finance available to businesses e.g. loans, mortgages, Government grants etc • Analyse the different sources of finance and the suitability for difference business ownerships • Understand the different costing in a business and know the Fixed and Variable cost in a business • Understand what the Breakeven point is and why it is important for a business to know what their breakeven point is <p>This term students will sit a practice Unit 1 exam paper and half a paper.</p>	<p>11.3 Unit 2.2 Finance</p> <ul style="list-style-type: none"> • Understand cash flow and be able to apply it to a cash flow forecast • Ratios • Annual rate of return <p>Unit 2.3 Influences on Businesses</p> <ul style="list-style-type: none"> • Ethical considerations • environmental considerations • the economic climate • globalisation <p>11.4 Unit 2.4 Interdependence</p> <ul style="list-style-type: none"> • Business calculation • Rate of return and whether the business viable • Financial data and how it is used in a business <p>Start revision Unit 1 and Unit 2 ready for the exam. All areas from Year 10 and Year 11 will be recapped before the exam.</p> <p>This term students will sit a practice Unit 1 and Unit 2 exam paper.</p>	<p>11.5 Revision Start revision Unit 1 and Unit 2 ready for the exam. All areas from Year 10 and Year 11 will be recapped before the exam.</p>	<p>Students will build on knowledge from Year 10 looking at how businesses develop and become bigger in to National and International businesses. We will look at how businesses can produce good on a mass scale and the financial documents needed in a business. Final looking at why businesses need to be ethical</p>

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	Skills				

Key Stage 4: Year 10-11 (Enterprise and Marketing)

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
Year 10 <i>Enterprise and Marketing</i>	Knowledge	<p>10.1 Introduction to CN Enterprise and Marketing Introduction to the course and the content that will be covered during the course</p> <p>Coursework R065 – Design a business proposal developing a new hat</p> <p>Students will cover</p> <ul style="list-style-type: none"> • The need for customer segmentation and how the market is segmented • The advantages to a business of market segmentation • Create a customer profile linked to the Hats scenario • Different methods of primary research with advantages and disadvantages for each method • Different methods of primary research with advantages and disadvantages for each method • Complete research of their own for their new hat • Review, analyse, and evaluate their research findings. <p>10.2 Design a business proposal Student will apply their research from term 1 to complete these tasks</p> <ul style="list-style-type: none"> • Generate product design ideas. • Produce a mood board • Create at least 2 hat designs based on their market research • Gain feedback on their designs • Use feedback to improve • Create a final design • Gain feedback on their designs • Use feedback to improve <ul style="list-style-type: none"> • Create a final design 	<p>10.3-4 Finance Breakeven Pricing strategies</p> <p>Finance Students will learn about</p> <ul style="list-style-type: none"> • Calculate the breakeven point using the formula method • Create breakeven chart • Create breakeven analysis on their products, looking at the impact in changes of selling price • Explain the risk involved • Analyse a range different pricing strategies <ul style="list-style-type: none"> ○ Competitive Pricing ○ Cost-plus ○ Price penetration ○ Promotional; pricing 	<p>10.5-10.6 Exam Preparation Students will focus on the exam unit R064. This exam will be taken in January of Y11.</p> <p>Students will focus on areas covered so far and apply to exam scenarios. Areas covered will be</p> <ul style="list-style-type: none"> • Target market • Research methods • Breakeven analysis • Breakeven chart <p>Return to coursework to complete R065 write up and the introduction to R066 Business Proposal.</p>	

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SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
	Skills				
	Knowledge	11.1-11.2 Exam Preparation Students will focus on the exam unit R064. This exam will be taken in January of Y11. Students will focus on the exam unit first. Areas that will be covered are: <ul style="list-style-type: none"> • Functional areas and the main activities carried out in each functional area • Product development • The product life cycle • Product Life cycle extension • Product differentiation • Attracting and retain customers • Factors to consider when pricing a product • Pricing strategies • Promotion techniques • Customer service This term students will sit a practice Unit R064 exam paper in December.	11.3-11.4 R066 –Pitch a Proposal Students will retake the exam R064 unit in January. This unit links to R065 coursework and develops their business idea by setting up a presentation pitch. <ul style="list-style-type: none"> • Brand and different branding techniques • Create a brand for their business relevant to their target audience. • Different promotional methods available to a business • Produce a pitch to ‘sell’ their product to an audience • Pitch to peers. • Self-assess and peer assess pitches • Reflect on their pitch and analyse their performance 	11.5 R064 – Exam Recap exam theory ready for the resits of the exam all areas from Year 10 and Year 11 will be recapped before the exam.	
Year 11 Enterprise and Marketing	Skills				

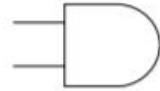
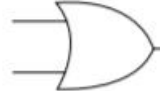
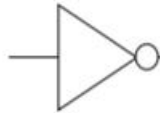
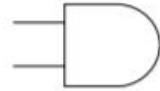
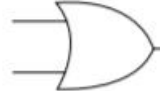
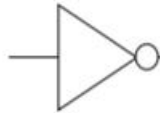
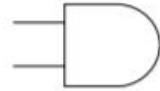
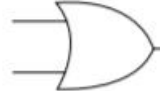
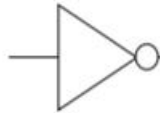
Key Stage 4: Year 10-11 (GCSE Computer Science)




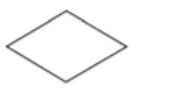





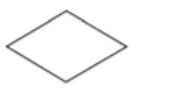





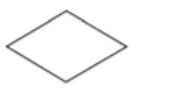


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Year 10 OCR GCSE Computer Science	Knowledge	1.1 – Systems Architecture 1.1.1 Architecture of the CPU The purpose of the CPU: <ul style="list-style-type: none"> • The fetch-execute cycle Common CPU components and their function: <ul style="list-style-type: none"> • ALU (Arithmetic Logic Unit) • CU (Control Unit) • Cache 	1.5 - Malware and Threats 1.5.1 Network Threats <ul style="list-style-type: none"> • Forms of attack: <ul style="list-style-type: none"> ○ Malware ○ Social engineering, e.g. phishing, people as the ‘weak point’ ○ Brute-force attacks ○ Denial of service attacks 	2.3 - Designing Robust Systems 2.3.1 Defensive design <ul style="list-style-type: none"> • Defensive design considerations: <ul style="list-style-type: none"> ○ Anticipating misuse ○ Authentication • Input validation • Maintainability: <ul style="list-style-type: none"> ○ Use of sub programs 	Introduction to the course and the content that will be covered during the course. Students will be made to understand that the course is split into three sections. Component 01: Computer systems Introduces students to the central processing unit (CPU), computer memory and storage, data

SUBJECT NAME	Term 1	Term 2	Term 3	Curriculum Sequencing
	<ul style="list-style-type: none"> Registers <p>Von Neumann architecture:</p> <ul style="list-style-type: none"> MAR (Memory Address Register) MDR (Memory Data Register) Program Counter o Accumulator <p>1.1.2 CPU performance</p> <p>How common characteristics of CPUs affect their performance:</p> <ul style="list-style-type: none"> Clock speed o Cache size Number of cores <p>1.1.3 Embedded systems</p> <ul style="list-style-type: none"> The purpose and characteristics of embedded systems Examples of embedded system <p>1.2 - Memory & Storage</p> <p>1.2.1 Primary storage (Memory)</p> <ul style="list-style-type: none"> The need for primary storage The difference between RAM and ROM The purpose of ROM in a computer system The purpose of RAM in a computer system Virtual memory <p>1.2.2 Secondary storage</p> <ul style="list-style-type: none"> The need for secondary storage Common types of storage: <ul style="list-style-type: none"> Optical Magnetic Solid state Suitable storage devices and storage media for a given application The advantages and disadvantages of different storage devices and storage media relating to these characteristics: <ul style="list-style-type: none"> Capacity Speed Portability Durability Reliability Cost <p>1.2.3 Units</p> <ul style="list-style-type: none"> The units of data storage: <ul style="list-style-type: none"> Bit Nibble (4 bits) Byte (8 bits) Kilobyte (1,000 bytes or 1 KB) Megabyte (1,000 KB) Gigabyte (1,000 MB) Terabyte (1,000 GB) Petabyte (1,000 TB) 	<ul style="list-style-type: none"> Data interception and theft The concept of SQL injection <p>1.5.2 Preventing Vulnerabilities</p> <ul style="list-style-type: none"> Common prevention methods: <ul style="list-style-type: none"> Penetration testing Anti-malware software Firewalls User access levels Passwords Encryption Physical security <p>1.6- Systems Software</p> <p>1.6.1 Systems software</p> <p>The purpose and functionality of operating systems:</p> <ul style="list-style-type: none"> User interface Memory management and multitasking Peripheral management and drivers User management File management <p>1.6.2 Utility Software</p> <ul style="list-style-type: none"> The purpose and functionality of utility software Utility system software: <ul style="list-style-type: none"> Encryption software Defragmentation Data compression <p>1.7- Ethical, Legal and Moral</p> <ul style="list-style-type: none"> Impacts of digital technology on wider society including: <ul style="list-style-type: none"> Ethical issues Legal issues Cultural issues Environmental issues Privacy issues Legislation relevant to Computer Science: <ul style="list-style-type: none"> The Data Protection Act 2018 Computer Misuse Act 1990 Copyright Designs and Patents Act 1988 Software licences (i.e. open source and proprietary) <p>2.1 - Algorithms & Computational Thinking</p> <p>2.1.1 Computational Thinking</p> <ul style="list-style-type: none"> Principles of computational thinking: <ul style="list-style-type: none"> Abstraction Decomposition Algorithmic thinking Identify the inputs, processes, and outputs for a problem 	<ul style="list-style-type: none"> Naming conventions Indentation Commenting <p>2.3.2 Testing</p> <ul style="list-style-type: none"> The purpose of testing Types of testing: <ul style="list-style-type: none"> Iterative Final/terminal Identify syntax and logic errors Selecting and using suitable test data: <ul style="list-style-type: none"> Normal Boundary Invalid/Erroneous Refining algorithms <p>2.4 - Boolean Logic</p> <ul style="list-style-type: none"> Simple logic diagrams using the operators AND, OR and NOT Truth tables Combining Boolean operators using AND, OR and NOT Applying logical operators in truth tables to solve problems <p>2.5 - Programming languages and Integrated Development Environments</p> <p>2.5.1 Languages</p> <ul style="list-style-type: none"> Characteristics and purpose of different levels of programming language: <ul style="list-style-type: none"> High-level languages Low-level languages The purpose of translators The characteristics of a compiler and an interpreter <p>2.5.2 The Integrated Development Environment (IDE)</p> <ul style="list-style-type: none"> Common tools and facilities available in an Integrated Development Environment (IDE): <ul style="list-style-type: none"> Editors Error diagnostics Run-time environment Translators <p>3.1 - Practical Python Skills</p> <p>All students must be given the opportunity to undertake a programming task or tasks during their course of study.</p> <p>develop the following skills within the following areas when programming:</p> <ul style="list-style-type: none"> Design Write 	<p>representation, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.</p> <p>Component 02: Computational thinking, algorithms, and programming</p> <p>Students apply knowledge and understanding gained in component 01. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic and translators.</p> <p>Practical programming</p> <p>Students are to be given the opportunity to undertake a programming task during their course of study which allows them to develop their skills to:</p> <ol style="list-style-type: none"> Design Write Test Refine <p>Programs using a high-level programming language. Students will be assessed on these skills during the written examinations, in particular component 02, Section B.</p>

SUBJECT NAME	Term 1	Term 2	Term 3	Curriculum Sequencing
	<ul style="list-style-type: none"> How data needs to be converted into a binary format to be processed by a computer Data capacity and calculation of data capacity requirements <p>1.3 – Data Representation</p> <p>1.3.1 Units and binary numbers</p> <p>1.3.2 Binary arithmetic and hexadecimal</p> <ul style="list-style-type: none"> Adding two positive binary numbers Converting between Binary, Hexadecimal and Denary. <p>1.3.3 Characters</p> <ul style="list-style-type: none"> The use of binary codes to represent characters The term ‘character set’: The relationship between the number of bits per character in a character set, and the number of characters which can be represented, e.g. ASCII, Unicode. <p>1.3.4 Images</p> <ul style="list-style-type: none"> How an image is represented as a series of pixels, represented in binary “Metadata” The effect of colour depth and resolution on: <ul style="list-style-type: none"> The quality of the image The size of an image file The need for compression Types of compression: <ul style="list-style-type: none"> Lossy Lossless <p>1.3.5 - Sound</p> <ul style="list-style-type: none"> How sound can be sampled and stored in digital form The effect of sample rate, duration, and bit depth on: <ul style="list-style-type: none"> The playback quality The size of a sound file <p>1.4 – Networks</p> <p>1.4.1 - Introduction to networks</p> <ul style="list-style-type: none"> Types of network: <ul style="list-style-type: none"> LAN (Local Area Network) WAN (Wide Area Network) Factors that affect the performance of networks The different roles of computers in a client-server and a peer-to peer network Star and Mesh network topologies <p>1.4.2 - Local Area Networks</p>	<ul style="list-style-type: none"> Structure diagrams <p>2.1.2 Searching & Sorting Algorithms</p> <ul style="list-style-type: none"> Create, interpret, correct, complete, and refine algorithms using: <ul style="list-style-type: none"> Pseudocode Flowcharts Reference language/high-level programming language Identify common errors Trace tables <p>2.2 - Programming Fundamentals</p> <p>2.2.1 Programming fundamentals</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 used to control the flow of a program: <ul style="list-style-type: none"> Sequence Selection Iteration (count- and condition-controlled loops) The common arithmetic operators The common Boolean operators AND, OR and NOT <p>2.2.2 Data Types</p> <ul style="list-style-type: none"> The use of data types: <ul style="list-style-type: none"> Integer Real Boolean Character and string Casting <p>2.2.3 Additional programming techniques</p> <ul style="list-style-type: none"> The use of basic string manipulation The use of basic file handling operations: <ul style="list-style-type: none"> Open Read Write Close The use of records to store data The use of SQL to search for data The use of arrays (or equivalent) when solving problems, including both one-dimensional (1D) and two-dimensional arrays (2D) How to use sub programs (functions and procedures) to produce structured code Random number generation 	<ul style="list-style-type: none"> Test Refine <p>Each task(s) must use one or more high-level textbased programming language, either to a specification or to solve a problem (or problems). They can use any high-level text-based programming language, such as:</p> <ul style="list-style-type: none"> Python Javascript HTML <p>Some high-level languages do not allow demonstration of all the Practical Programming skills. Where this is the case, schools are encouraged to consider using a second language for practical experience.</p> <p>Practical Programming skills will be assessed in Component 2 of the qualification, in particular Section B.</p>	

SUBJECT NAME	Term 1	Term 2	Term 3	Curriculum Sequencing
	<ul style="list-style-type: none"> • The hardware needed to connect stand-alone computers into a Local Area Network: <ul style="list-style-type: none"> • Wireless access points • Routers o Switches • NIC (Network Interface Controller/Card) • Transmission media • 1.4.3 - Wide Area Networks <ul style="list-style-type: none"> • The hardware needed to connect stand-alone computers into a Local Area Network: <ul style="list-style-type: none"> • Wireless access points • Routers and Switches • NIC (Network Interface Controller/Card) • Transmission media • 1.4.4 - Wired and wireless networks, protocols and layers <ul style="list-style-type: none"> • Modes of connection: <ul style="list-style-type: none"> ○ Wired: Ethernet ○ Wireless: Wi-Fi and Bluetooth • Encryption • IP addressing and MAC addressing • Standards • Common protocols including: <ul style="list-style-type: none"> ○ TCP/IP (Transmission Control Protocol/Internet Protocol) ○ HTTP (Hyper Text Transfer Protocol) ○ HTTPS (Hyper Text Transfer Protocol Secure) ○ FTP (File Transfer Protocol) ○ POP (Post Office Protocol) ○ IMAP (Internet Message Access Protocol) ○ SMTP (Simple Mail Transfer Protocol) • The concept of layers 			
Skills	<p>3.1 Systems Architecture <u>Students will be able to describe:</u></p> <ul style="list-style-type: none"> • What actions occur at each stage of the fetch-execute cycle • The role/purpose of each component and what it manages, stores, or controls during the fetch-execute cycle • The purpose of each register, what it stores (data or address) • The difference between storing data and an address 	<p>1.5 Malware & Threats <u>Students will be able to explain:</u></p> <ul style="list-style-type: none"> • Threats posed to devices/systems • Knowledge/principles of each form of attack including: <ul style="list-style-type: none"> ○ How the attack is used ○ The purpose of the attack • Understanding of how to limit the threats posed in 1.5.1 • Understanding of methods to remove vulnerabilities 	<p>2.3 – Designing Robust Systems <u>Students should demonstrate:</u></p> <ul style="list-style-type: none"> • An understanding of the issues a programmer should consider ensuring that a program caters for all likely input values • An understanding of how to deal with invalid data in a program • Authentication confirms the identity of a user • Practical experience of designing input validation and simple authentication (e.g. username and password) 	

SUBJECT NAME	Term 1	Term 2	Term 3	Curriculum Sequencing								
	<ul style="list-style-type: none"> Understanding of each characteristic as listed The effects of changing any of the common characteristics on system performance, either individually or in combination What embedded systems are Typical characteristics of embedded systems Familiarity with a range of different embedded systems <p>1.2 Memory & Storage <u>Students will be able to explain:</u></p> <ul style="list-style-type: none"> Why computers have primary storage How this usually consists of RAM and ROM Key characteristics of RAM and ROM Why virtual memory may be needed in a system How virtual memory works Transfer of data between RAM and HDD when RAM is filled Why computers have secondary storage Recognise a range of secondary storage devices/media Differences between each type of storage device/medium Advantages/disadvantages for each storage device <p>1.3 – Data Representation <u>Students will be able to demonstrate:</u></p> <ul style="list-style-type: none"> Why data must be stored in binary format Familiarity with data units and moving between each Data storage devices have different fixed capacities Calculate required storage capacity for a given set of files Calculate file sizes of sound, images and text files <ul style="list-style-type: none"> sound file size = sample rate x duration (s) x bit depth image file size = colour depth x image height (px) x image width (px) text file size = bits per character x number of characters Denary number range 0 – 255 Hexadecimal range 00 – FF Binary number range 00000000 – 11111111 	<ul style="list-style-type: none"> Knowledge/principles of each prevention method: <ul style="list-style-type: none"> What each prevention method may limit/prevent How it limits the attack <p>1.6 Systems Software <u>Students will be able to explain:</u></p> <ul style="list-style-type: none"> What each function of an operating system does Features of a user interface Memory management, e.g. the transfer of data between memory, and how this allows for multitasking Data is transferred between devices and the processor This process needs to be managed User management functions, e.g.: <ul style="list-style-type: none"> Allocation of an account Access rights Security, etc. File management, and the key features, e.g.: <ul style="list-style-type: none"> Naming & Allocating to folders Moving files Saving, etc. Why computers often come with utility software, and how this performs housekeeping tasks The purpose of the identified utility software and why it is required <p>1.7 Ethical, Legal & Moral <u>Students will demonstrate knowledge that:</u></p> <ul style="list-style-type: none"> Technology introduces ethical, legal, cultural, environmental and privacy issues A variety of examples of digital technology and how this impacts on society The purpose of each piece of legislation and the specific actions it allows or prohibits There is a need to license software and the purpose of a software licence Open source provides access to the source code and the ability to change the software. Features of proprietary (no access to the source code, purchased commonly as off-the-shelf) are massively different. <p>2.1 Algorithms & Computational Thinking <u>Students will be able to explain:</u></p>	<ul style="list-style-type: none"> Why commenting is useful and apply this appropriately The difference between testing modules of a program during development and testing the program at the end of production Syntax errors as errors which break the grammatical rules of the programming language and stop it from being run/translated Logic errors as errors which produce unexpected output Normal test data as data which should be accepted by a program without causing errors Boundary test data as data of the correct type which is on the very edge of being valid Invalid test data as data of the correct data type which should be rejected by a computer system Erroneous test data as data of the incorrect data type which should be rejected by a computer system Ability to identify suitable test data for a given scenario Ability to create/complete a test plan <p>2.4 – Boolean Logic <u>Students will show understanding of:</u></p> <ul style="list-style-type: none"> Knowledge of the truth tables for each logic gate Recognition of each gate symbol Understanding of how to create, complete or edit logic diagrams and truth tables for given scenarios Ability to work with more than one gate in a logic diagram Simple Logic gates and truth tables: <table border="1" data-bbox="1676 1480 2255 1879"> <thead> <tr> <th>Boolean Operators</th> <th>Logic Gate Sym</th> </tr> </thead> <tbody> <tr> <td>AND (Conjunction)</td> <td></td> </tr> <tr> <td>OR (Disjunction)</td> <td></td> </tr> <tr> <td>NOT (Negation)</td> <td></td> </tr> </tbody> </table>	Boolean Operators	Logic Gate Sym	AND (Conjunction)		OR (Disjunction)		NOT (Negation)		
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SUBJECT NAME	Term 1	Term 2	Term 3	Curriculum Sequencing																																																																				
	<ul style="list-style-type: none"> Understanding of the terms 'most significant bit', and 'least significant bit' Conversion of any number in these ranges to another number base Ability to deal with binary numbers containing between 1 and 8 bits <ul style="list-style-type: none"> e.g. 11010 is the same as 00011010 Understand the effect of a binary shift (both left or right) on a number Carry out a binary shift (both left and right) How characters are represented in binary How the number of characters stored is limited by the bits available The differences between and impact of each character set ü Understand how character sets are logically ordered, e.g. the code for 'B' will be one more than the code for 'A' Binary representation of ASCII in the exam will use 8 bits Each pixel has a specific colour, represented by a specific code The effect on image size and quality when changing colour depth and resolution Metadata stores additional image information (e.g. height, width, etc.) Required ü Analogue sounds must be stored in binary Sample rate – measured in Hertz (Hz) ü Duration – how many seconds of audio the sound file contains Bit depth – number of bits available to store each sample (e.g. 16-bit) <p>1.4 – Networks Students will be able to explain:</p> <ul style="list-style-type: none"> The characteristics of LANs and WANs including common examples of each Their understanding of different factors that can affect the performance of a network, e.g.: <ul style="list-style-type: none"> Number of devices connected Bandwidth The tasks performed by each piece of hardware The concept of the Internet as a network of computer networks A Domain Name Service (DNS) is made up of multiple Domain Name Servers A DNS's role in the conversion of a URL to an IP address 	<ul style="list-style-type: none"> Their understanding of the three principles and how they are used to define and refine problems Produce simple diagrams to show: <ul style="list-style-type: none"> The structure of a problem Subsections and their links to other subsections Complete, write or refine an algorithm using the techniques listed Identify syntax/logic errors in code and suggest fixes Create and use trace tables to follow an algorithm Understand the main steps of each algorithm Understand any pre-requisites of an algorithm Apply the algorithm to a data set Identify an algorithm if given the code or pseudocode for it <p>Flowchart symbols</p> <table border="1" data-bbox="1083 913 1656 1176"> <tr> <td></td> <td>Line</td> <td></td> <td>Input/Output</td> </tr> <tr> <td></td> <td>Process</td> <td></td> <td>Decision</td> </tr> <tr> <td></td> <td>Sub program</td> <td></td> <td>Terminal</td> </tr> </table> <p>2.2 Programming Fundamentals Students will demonstrate knowledge of:</p> <ul style="list-style-type: none"> Practical use of the techniques in a high-level language within the classroom Understanding of each technique Recognise and use the following operators: <table border="1" data-bbox="1083 1428 1656 1743"> <thead> <tr> <th colspan="2">Comparison operators</th> <th colspan="2">Arithmetic operators</th> </tr> </thead> <tbody> <tr> <td>==</td> <td>Equal to</td> <td>+</td> <td>Addition</td> </tr> <tr> <td>!=</td> <td>Not equal to</td> <td>-</td> <td>Subtraction</td> </tr> <tr> <td><</td> <td>Less than</td> <td>*</td> <td>Multiplication</td> </tr> <tr> <td><=</td> <td>Less than or equal to</td> <td>/</td> <td>Division</td> </tr> <tr> <td>></td> <td>Greater than</td> <td>MOD</td> <td>Modulus</td> </tr> <tr> <td>>=</td> <td>Greater than or equal to</td> <td>DIV</td> <td>Quotient</td> </tr> <tr> <td></td> <td></td> <td>^</td> <td>Exponentiation (to the p</td> </tr> </tbody> </table>		Line		Input/Output		Process		Decision		Sub program		Terminal	Comparison operators		Arithmetic operators		==	Equal to	+	Addition	!=	Not equal to	-	Subtraction	<	Less than	*	Multiplication	<=	Less than or equal to	/	Division	>	Greater than	MOD	Modulus	>=	Greater than or equal to	DIV	Quotient			^	Exponentiation (to the p	<p style="text-align: center;">Truth Tables</p> <table border="1" data-bbox="1685 241 2249 493"> <thead> <tr> <th colspan="2">AND</th> <th colspan="2">OR</th> </tr> <tr> <th>A</th> <th>B</th> <th>A AND B</th> <th>A OR B</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>2.5 – Programming languages and Integrated Development Environments Pupils will demonstrate that they understand:</p> <ul style="list-style-type: none"> The differences between high- and low-level programming languages The need for translators The differences, benefits and drawbacks of using a compiler or an interpreter Knowledge of the tools that an IDE provides How each of the tools and facilities listed can be used to help a programmer develop a program Practical experience of using a range of these tools within at least one IDE <p>3.1 -Practical Python Skills Students will develop their strengths in the following areas of python programming:</p> <ul style="list-style-type: none"> Numbers and Basic Operations Values, Variables and Expression Data Types Functions Control Structures Lists Working with Files Classes Dealing with Errors <p>As well as more tangible & testable areas of progress such as those named above, students will also build on their levels of resilience as well as their problem-solving skills. Students will be forced into using computational thinking in order to correctly create a solution for each problem given to them.</p>	AND		OR		A	B	A AND B	A OR B	0	0	0	0	0	1	0	1	1	0	0	1	1	1	1	1	
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BUSINESS AND ICT: 5-year Curriculum Overview 2021-22

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
		<ul style="list-style-type: none"> The concept of servers providing services (e.g. Web server “ Web pages, File server “ file storage/retrieval) The concept of clients requesting/using services from a server The Cloud: remote service provision (e.g. storage, software, processing) Advantages and disadvantages of the Cloud Advantages and disadvantages of the Star and Mesh topologies Benefits and drawbacks of wired versus wireless connection The principle of encryption to secure data across network connections IP addressing and the format of an IP address (Ipv4 and Ipv6) A MAC address is assigned to devices; its use within a network The principle of a standard to provide rules for areas of computing Standards allows hardware/software to interact across different manufacturers/producers The principle of a (communication) protocol as a set of rules for transferring data ü That different types of protocols are used for different purposes The basic principles of each protocol i.e. its purpose and key features How layers are used in protocols, and the benefits of using layers; for a teaching example, please refer to the 4-layer TCP/IP model 			
<p>Year 11 OCR GCSE Computer Science</p>	<p>Knowledge</p>	<p>Pupils will revisit the following units from a revision point of view. Lessons designed to test students on prior knowledge, rather than imparting new information. Theory by this point of the year is delivered on a ‘Gap Closing’ basis.</p> <p>1.1 - Systems Architecture</p> <ul style="list-style-type: none"> CPU architecture Factors that affect CPU performance Internal & External Hardware <p>1.2 - Memory & storage</p> <ul style="list-style-type: none"> Main Memory (RAM) Secondary Storage Virtual Memory <p>1.3 - Data representation</p> <ul style="list-style-type: none"> Binary, Hex & Denary Conversion & Addition 	<p>Pupils will revisit the following units from a revision point of view. Lessons designed to test students on prior knowledge, rather than imparting new information. Theory by this point of the year is delivered on a ‘Gap Closing’ basis.</p> <p>1.5 - Malware & threats</p> <ul style="list-style-type: none"> Forms of attack Preventing vulnerabilities <p>1.6 - System Software</p> <ul style="list-style-type: none"> Systems software Utilities software <p>1.7 - Ethical, Legal & Moral</p> <ul style="list-style-type: none"> Impacts of technology of wider society Legislation relevant to computer science <p>2.1 Algorithms & Computational Thinking</p>	<p>Pupils will revisit the following units from a revision point of view. Lessons designed to test students on prior knowledge, rather than imparting new information. Theory by this point of the year is delivered on a ‘Gap Closing’ basis.</p> <p>2.3 - Designing Robust systems</p> <ul style="list-style-type: none"> Defensive design Testing <p>2.4 - Boolean Logic</p> <ul style="list-style-type: none"> Creation and understanding of logic diagrams Creation and understanding of truth tables Combining Boolean operators using AND, OR and NOT. Applying logical operators in truth tables <p>2.5 - Programming Languages & IDEs</p>	

BUSINESS AND ICT: 5-year Curriculum Overview 2021-22

SUBJECT NAME		Term 1	Term 2	Term 3	Curriculum Sequencing
		<ul style="list-style-type: none"> Text in binary Images in binary Sound in Binary <p>1.4 - Networks</p> <ul style="list-style-type: none"> Computer Networks & Components Local Area Networks Wide Area Networks Protocols & Layers 	<ul style="list-style-type: none"> Computational thinking Searching & Sorting algorithms <p>2.2 Programming Fundamentals</p> <ul style="list-style-type: none"> Programming fundamentals Data types Additional programming techniques 	<ul style="list-style-type: none"> Programming languages Integrated Development Environment (IDE) <p>3.1 - Practical Programming Skills</p> <p>Develop the following skills within the following areas when programming:</p> <ul style="list-style-type: none"> Design Write Test Refine 	
	Skills	<p>Students will spend time further developing skills already developed in Y10.</p> <p>If skills were not fully established throughout the previous year, due to misconceptions or absence, specific interventions will be deployed to ensure all students are able to access the full breadth of content made available by the course.</p>	<p>Students will spend time further developing skills already developed in Y10.</p> <p>If skills were not fully established throughout the previous year, due to misconceptions or absence, specific interventions will be deployed to ensure all students are able to access the full breadth of content made available by the course.</p>	<p>Students will spend time further developing skills already developed in Y10.</p> <p>If skills were not fully established throughout the previous year, due to misconceptions or absence, specific interventions will be deployed to ensure all students are able to access the full breadth of content made available by the course.</p>	