Subject: Computer Science

Key content – knowledge and skills	National Curriculum focus
The Entry Level Computing should introduce candidates to the fundamental concepts of Computing. It should prepare and motivate some students to study Computing at GCSE level. The Entry Level Computing must enable candidates to: - develop their understanding of the fundamental hardware of a computer system - develop their understanding of common types of software - develop an understanding of simple logic - acquire the skills to write simple computer programs - develop an understanding of the development of a computer technology and the effects it has had	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems Understand several key algorithms that reflect computational thinking [for example, algorithms for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem Use two 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 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] Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems 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

Key assessment points

Exam – Hardware, Software, Logic – 60% – 3 Mini exams on each topic in January 2020

Programming Project – 20% April 2020

Trendings in Computing project – 20% in June 2020

Students will be assessed on 3 assessments throught out the year – Students who achieve a higher level will be considered for the GCSE Computer Science in year 10

Christian ethos

Both the curriculum and group work should develop in students a responsible moral attitude as members of a responsible, safe and considerate online world, recognising that Christian ethics are as important online as offline. Students will understand and be able to recognise and also discuss how Christian values were applied in the history of technology and how Social Media should be used in a positive way which represents the Christian ethos. To also think about the Moral, ethical and social considerations when using technology

British values

Democracy – Will see how technology is used in countries that have democracy and compare it to how technology is used where it is autocracy
Rule of Law – Look at all the Computer + Data laws based in the UK regarding technology
Individual liberty – See how certain countries block access to technology or websites so they are not able to access them. Think about Ethical legal and social considerations of Computing.
Mutual respect – To see how technolodgy and social media should be used based on mutual respect irrespective of what country you are in or of race and colour.
Diversity - To also think about the Moral, ethical and social considerations when using technology and how people use software in different ways.

Connected Curriculum

E Safety – This has many links with PSHE. Students look at the mental impact Social Media (SM) can have on an individual it also looks at the financial impact of SM on an individual company alongside looking at the well being of an individual when it comes to using technology, a particular focus on

dangers online and steps that can be taken to prevent these dangers (cyberbullying, online grooming, sexting)

Data representation - Logic – Students will be comparing Binary, denary hexadcecimal, ASCII code, all relatable to maths. Multiplicaton, divisions, adding, In addition conversion, unit rates of storage devices.

Trends in Computing – Researching a piece of technology and creating a timeline of products that have come out since – For example pupils may chose to talk about the history of music players through history and discuss how they have developed over time from a technologicial point of view.

Year 9
Subject: Computing
Long-term plan

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Week	Month	Learning Intentions and/or Key Questions
Aut1-1 Aut1-2 Aut1-3 Aut1-4	September Theory	- E safety - List, Understand and Create a powerpoint on Social networks – Particularly advan + disadvan of Social network - **Hardware** - components of a computer - Internal components of a computer and their function - Peripherals and their function - **Software** - functions of an operating system - types of application software in different contexts
Aut1-5 Aut1-6 Aut1-7	October Theory	
		Half term holiday
Aut2-1 Aut2-2 Aut2-3 Aut2-4 Aut2-5	November Theory	- types of system software in different contexts - types of utility software in different contexts. - **Logic** – Knowledge, understanding of binary numbers - Knowledeg , understanding of logic gates - Knowledge, understandin of sequencing of instructions. - Revist topics from Hardware, software, logic - Practise tests
Aut2-6 Aut2-7	December Theory	
		Christmas holiday
Spr1-1 Spr1-2 Spr1-3 Spr1-4 Spr1-5	January Programming Project	- **Exam Week** - Knowledge + understanding of: •Flowcharts - Knowledge + Understanding of Psuedocode - plan a program they intend to write - output to text or movement on screen - store an input in a variable.

Spr1-6	February Programming project	
		Half term holiday
Spr2-1		- write programs with instructions in the correct order. - make a program execute something IF a given condition is true. - use a loop in a program to execute statements multiple times. - use an arithmetic operator within a program - add suitable comments to their programs.
Spr2-2		
Spr2-3	March Programming project	
Spr2-4		
Spr2-5		
Spr2-6		
	April	**Easter holiday**
Sum1-1		- Create a test table for program createdworks in the way it is expected to. Document - evaluate a program they have written - make a program execute something IF a given condition is true. - Improve program created in chosen software - describe a development in computing - describe different examples of the use/ application of that technology and their impact
Sum1-2		
Sum1-3	May Trends in computing – research	
Sum1-4		
Sum1-5		
Sum1-6		
	June	**Half term holiday**
Sum2-1		- describe examples of ethical, considerations related to chosen developement - - Describe examples of Social Considerations related to chosen development - Describe examples of Legal considerations related to their chosen development -
Sum2-2		
Sum2-3		
Sum2-4		
Sum2-5	July	
Sum2-6		
Sum2-7		

Subject: Computing
Unit: Entry Level Computing
Medium-term plan (1)

Week	Learning Intentions/Key Questions	Learning goals for students/ content to cover	Suggested activities and differentiation	Resources needed
1	**Investigate** different components of a computer (Input, Output, Storage) **Describe** the basic functions of common peripherals	List different types of PC/ computer devices Investigate different components of a computer (Input, Output, Storage) Analyse the basic function of common peripherals	Label the components of a computer system. **(5 mins)** Define the term External Hardware and write into books. Copy and complete the External Hardware diagram in exercise books**. (10 mins)** **Mini Plenary: Q&A (5 MINS)** **Main:** Watch the BBC Bite size video on Input, Processing Output devices and complete the Hardware worksheet. **(15-20 mins.)** http://www.bbc.co.uk/schools/gcsebitesize/ict/hardware/0inputandoutputdevices_act.shtml **Peer assessment of student work:** **Feedback applied to improve work(** Mini Plenary: Difference between Input and Output devices: Q&A session. OR online game to recap Input devices Plenary :Complete **matching worksheet.** **Website to help students with research:** http://www.bbc.co.uk/schools/gcsebitesize/ict/hardware/0inputandoutputdevicesrev2.shtml	L1 ppt Input, output storage – Resources are on there that are needed.
2	**Investigate** the Internal components of a computer/ storage	Identify the internal components of a computer. Investigate parts of a computer Explain the functions of the internal components	**You will be given one topic. Research the topic and students will be selected randomly to present to the class.** ● **Floppy disk** ● **Zip disk** ● **CD/DVD** ● **External hard drive** ● **Flash memory** ● **Online storage** ● **SD Card** ● **Apple air capsule** **Research :** 1. **What is it?** 2. **What is it used for?** 3. **Average price** 4. **1 advantage** 5. **1 disadvantage**	L2 ppt – Resources needed are on the ppt

3-4	**Describe** the functions of computer peripherals and operating systems	**Describe** the functions of computer peripherals and operating systems	• **Starter:** • Students are to define what they think the term Peripheral means (CT, Paired Work, Thinking Time) • **Q and A** • Class discussion and feedback of the above. • **(2-3 mins)** • **Main: Activity 1-** Students are to carry out research to complete **complete peripheral devices worksheet.** • **<u>For each device:</u>** • **- Name** - **Functions (what is it suppose to do?)** - **Input/ output** • Code breaking activity	L3 ppt resources are on ppt
4-5	Revision of Hardware devices and internal components of a computer	Recall hardware concepts	• **Starter:** • Students are to define what they think the term Peripheral means (CT, Paired Work, Thinking Time) • **Q and A** • Class discussion and feedback of the above. • **(2-3 mins)** • **Main: Activity 1-** Students are to carry out research to complete **a poster /ppt to cover the main topics of the hardware exam unit.** • **<u>For each device:</u>** • **- Name** - **Functions (what is it suppose to do?)** - **Input/ output**	L4 ppt resources are on ppt
5-6	**Describe** the role of an Operating System and **Investigate** the functions of an operating system	• State what is an operating system • List examples of Operating Systems • Describe the main functions of different Operating Systems • Evaluate presentations and provide feedback/Targets on strengths/weaknesses	• **Starter:** • Students are to define what they think the term Peripheral means (CT, Paired Work, Thinking Time) • **Q and A** • Class discussion and feedback of the above and students to provide examples • **(2-3 mins)** • **Main: Activity 1-** Students are placed into groups and create a presentation for the following • *Ict work out* • *Teach ict* • **Mini plenary:** check progress	L5 ppt – resources are on the ppt

			• **Main-** students to present to class. • **Plenary:** evaluate learning	

6	**Investigate and describe** the purpose of different Application Software	• Listen to definitions or application and system software.
		• Investigate application and system software
		• Describe the difference between the two.
		• Evaluate mind map using feedback
			• **Starter:**
			• http://www.bbc.co.uk/schools/gcsebitesize/ict/software/3applications_act.shtml
			• http://www.bbc.co.uk/bitesize/ks3/ict/software_applications/software_applications/activity/
			• **(2-3 mins)**
			• **Main: Activity 1-** students create a mind map
			  • **What is application software**
			  • **What is system software**
			  • **Example of each and what the software is used for**
			• **Mini plenary:** check progress
			• **Main-** students to present to class.
			• **Plenary:** evaluate learning
				L6 ppt resources are on the ppt that are needed

7	**Investigate and describe** the different types of utility software	• Define term system utilities
		• Investigate different system utility software
		• Report findings
		• Evaluate poster using feedback
			• **System Software: System Utilities**
			• **Task Create a poster or a mind map for the following**
			  • **Computer Security**
			• - **Anti-Virus-** what is it? examples 2-3
			• - **Spyware Protection**- what is it
			• - **Firewalls** what is and why is it needed
			  • **Disk Organisation** - **DISK Defragmentation-** what is this
			  • **System Maintenance**
			• - **Clean-up** tools what is a clean up tool and why is it needed
			• - **Automatic updating**- what is it and why is it important
			• **Mini plenary:** Present work done so far – a good example selected and exhibited to the rest of the class.
				L7 ppt – resources are on ppt that are needed.

			• Peer assessment of the flyer that has been produced • Make improvements to flyer (• **Plenary:** Present first and final draft:	