Subject Curriculum – Year 7 Computing

	Autumn Term		Spring Term		Summer Term	
Big Ideas & Purpose	**Unit 1 HT1 Using computers safely, effectively and responsibly** This is a theoretical unit covering the necessary basic knowledge to use computers safely, effectively and responsibly. Pupils begin by looking at file management and security. The unit then moves on to e-safety (cyber-bullying, phishing etc.), and online profiles to give pupils a better understanding and awareness of using social media. The functionality and operation of email and search engines and how to use them effectively are covered, and a final lesson includes a multiple-choice test on the contents of the unit and basic computer use. **Unit 2 HT2/HT3 Spreadsheet modelling** The unit is centred around creating a financial model for a TV show. Pupils start by looking at different types of model and then use basic spreadsheet techniques to create and format a simple financial model to calculate the expected income from viewers' voting. The model is then extended to include sales from merchandising, with the introduction of "what if" scenarios. Finally, the pupils create a seat booking system to book seats and calculate income from seat sales. Spreadsheet features covered include SUM, MAX, IF and COUNTIF functions, cell naming, conditional formatting, validation, charting and simple macros.		**Unit 3 HT3/HT4 How computers work part 1** This is a theoretical unit covering the basic principles of computer architecture and use of binary. Pupils will gain an understanding that there are a wide range of digital devices that are used in many different aspects of our lives. They will understand what computer hardware and software are and be able to give examples. Pupils will also learn what data and information are and how to use a search engine effectively. Pupils will then look at some simple binary to decimal conversion and vice versa. **Unit 4HT4/HT5 Scratch** Pupils begin this unit with an introduction to algorithms to show the important of following a sequence of instructions in order. They then move onto Scratch where they will learn about iteration, variables and selection. When creating code they will get to know how to test and debug their programs. This unit will help give students some basic understanding of the programming constructs that will be later used during Python in Year 8 and Year 9.		**Unit 5 HT6 Comic Strip** Pupils begin this unit by looking at a client brief to gain an understanding of how to meet the needs of the client. They will create a mind map to help generate ideas on how they will meet the client brief. Once they have done this, they will then create a storyline and script, which they will then apply to a drawn storyboard. Once all pre-production documents are completed pupils will then use computer software to create a digital comic strip. They will then evaluate and improve their comic strip by gathering feedback from their peers.	
Programme of Study	**Unit 1** Using computers safely, effectively, and responsibly	**Unit 2** Spreadsheet modelling	**Unit 3** How computers work part 1	**Unit 4** Scratch	**Unit 5** Comic Strips	
Key Assessments	Year 7 Baseline Unit 1 and Unit 2 will also have the following: • Key word test		Unit 3 and Unit 4 will also have the following: • Key word test • POP task		Unit 5 will also have the following: • Key word test • POP task	

	• POP task • End of unit knowledge test		• End of unit knowledge test		• End of unit knowledge test
Key skills	• Use basic file management techniques to create folders, save, copy, move, rename and delete files and folders and make backup copies of files • recognise extensions for common file types such as .doc or .docx, .ppt, .jpg etc • keep their files in well organised and appropriately named folders • explain what constitutes a "strong" password for an online account • describe a code of conduct • list some of the dangers and drawbacks of social networking sites • list some possible responses to cyberbullying • send and reply to emails, send attachments • Use a search engine to find information	• Give examples of how computer models are used in the real world • Format a simple spreadsheet model • Use simple formulae and functions • Name cells in a spreadsheet model • Use a simple spreadsheet model to explore different "what if" scenarios • Create a basic pie chart to display results	• Distinguish between hardware and software • Give examples of computer hardware and software • Draw a block diagram showing CPU, input, output and storage devices • Name different types of permanent storage device • Suggest appropriate input and output devices for a simple scenario • Explain what RAM and ROM are used for • Show how numbers and text can be represented in binary • Explain the impact of future technologies	• Design simple algorithms to solve problems • Sequence instructions in order to make things happen • Use variables in programming structures • Assemble code in procedural blocks • Use simple Boolean operators in programming code • Carry out simple tests to debug their project •	• Understand how to interpret a client brief • Use a mind map to help produce ideas • Create a storyline and script • Understand what should be including on a storyboard • Create a storyboard • Create a comic strip using computer software • Use feedback to make improvements to a product • Evaluate a product against success criteria
Links to careers	• Social media manager	• Data entry clerk • Business analyst • Information scientist	• IT support technician • IT trainer	• App developer • Computer games developer	• Film/Video Editor • Video Producer

	• Cyber intelligence officer • Media researcher • Forensic computer analyst	• Accountant • Financial analyst	• Technical author • E-learning developer	• Computer games tester	• Public Relations Specialist • Art Director • Publishing, Editorial Manager	

Subject Curriculum – Year 8 Computing

	Autumn Term		Spring Term		Summer Term	
Big Ideas & Purpose	**Unit 1 HT1 Binary** This unit builds upon the unit of how computers work in Year 7 when students briefly looked at binary representation. In this unit students will look further into how binary can be represented in several different formats such as how it is used to store images and sound. This will then lead on nicely to the next unit of study where students investigate how a computer works in more detail. **Unit 2 HT1/HT2 How computers work part 2** The unit builds upon the unit that pupils study in year 7 of how computers work. Pupils deepen their understanding of different parts of a computer. Focusing on how the CPU and RAM work. They also look at different types of computer networks, how they can be connected and the different network layouts. Pupils will also gain an understanding on how data is sent over a network, looking at bandwidth and latency as well as how different computer networks such as client server and peer to peer are used.		**Unit 3 HT3/HT4 Introduction to python** This is an introduction to Python, a powerful but easy-to-use high-level programming language. The focus is on getting pupils to understand the process of developing programs, the importance of writing correct syntax, being able to formulate algorithms for simple programs and debugging their programs. Pupils will look at If statements and create a quiz, whilst covering concepts such as validation and searching. The pupils' final programs are put into a learning portfolio with evidence of correct running, for assessment purposes. **Unit 4 HT4/HT5 Spies** This unit covers cryptography and why in modern society it is vital to use. Pupils will learn what encryption and decryption are, as well as learning a variety of different encryption methods. They will learn that using multiple encryption methods ensures that the information will be more secure and will carry out tasks where they try and crack the code. At the end of the unit pupils will be assessed on their learning using the variety of different methods they have learnt throughout the topic.		**Unit 5 HT6 User interface** The purpose of this project is to create a digital information point for Cuisine Island, a restaurant that offers international cuisine. The digital information point will be integrated into the restaurant's website and will serve as a valuable resource for adults, families, and customers with accessibility needs. This digital information point will provide essential information about the restaurant, its diverse food offerings, and enable customers to make table reservations. It aims to enhance the user experience, improve accessibility, and promote the restaurant's services. The end product will take consideration of the specific target audience and customers with Accessibility Needs. This group encompasses individuals who may have specific requirements related to accessibility, such as visually impaired users who rely on screen readers or those with mobility challenges. The digital information point must be designed to accommodate these needs, with features like alternative text, keyboard navigation, and readable fonts. The purpose of this unit is to prepare students for the BTEC DIT course at KS4.	
Programme of Study	**Unit 1** Binary	**Unit 2** How computers work part 2	**Unit 3** Python	**Unit 4** Spies	**Unit 5** User Interface	
Key Assessments	Unit 1 and Unit 2 will have the following: • Key word test • POP task • End of unit knowledge test		Unit 3 and Unit 4 will have the following: • Key word test • POP task • End of unit knowledge test		Unit 5 will have the following: • Key word test • POP task • End of unit knowledge test	

Key skills	• Understand what binary and denary are • Convert binary to denary • Convert denary to binary • Complete binary addition • Understand how images are stored • Understand how sound is stored	• Understand what the CPU and RAM are • Know how the fetch-execute cycle works • Know what a computer network is • Understand the different between a LAN and WAN • Explain the advantages and disadvantages of different modes of connection • Know the different network topologies that a network can use • Explain what bandwidth and latency are • Understand the advantages and disadvantages of using a client server and peer to peer	• Run simple Python programs in Interactive and Script mode • Write pseudocode to outline the steps in an algorithm prior to coding • Write programs using different types of data (e.g. strings and integers) • Correctly use different variable types (e.g. integer and floating point), assignment statements, arithmetic operators • Distinguish between syntax and logic errors and be able to find and correct both types of error • Use comments to document their programs and explain how they work Create a problem using if statements	• Understand what cryptography is • Explain what encryption is • Understand why encryption is important • Explain what decryption is • Use a number of different encryption methods to decrypt and encrypt data • Use an encryption algorithm to encrypt a message • Use an decryption algorithm to decrypt a message •	• Understand what a user interface is • Understand the use of different types of user interface and how they vary across different uses, devices and purposes. • Consider the varying needs of the audience and how they affect both the type and the design of the interface. • Understand how design principles provide both appropriate and effective user interaction with hardware devices.	
Links to careers	• Programmer • Platform developer • Web developer • Games producer	• IT support technician • IT trainer • Technical author • E-learning developer	• Software developer • Programmer • Technical author • User experience designer (UX) • Systems analyst • App developer	• Cyber intelligence officer • Forensic computer analyst • Security service personnel • Data Analysis Engineer	• Software support engineer • Digital Marketer • Web developer • IT Project manager	

Our Lady and St. Bede Catholic Academy

Subject Curriculum – Year 9 Computing

	Autumn Term	Spring Term	Summer Term
Big Ideas & Purpose	**Unit 1 HT1 Computational thinking and problem solving** This unit helps develop problem solving skills and logical reasoning. By studying this topic it gives students the opportunity to see how to approach complex problems more effectively and understand how important it is that problems need to be broken down in order to solve them. This will then set students into a good position when starting Python next steps. **Unit 2 HT2 Python: next steps**	**Unit 3 HT3/HT4 Logic Gates and Binary** This unit will teach pupils the three main logic gates that a computer system will use (AND, OR and NOT). Pupils will learn how the inputs and outputs for each of these logic gates work, along with the correct symbols for each. Pupils will also learn how to put logic gates into truth tables. Pupils will build upon their knowledge from earlier years where they have looked at binary to denary conversions and will continue to develop these skills as well as looking at binary addition and exploring how hexadecimal is converted and stored.	**Unit 5 HT6 Computer Forensics** This unit gives pupils the change to use their detectives' skills in the case of a missing school girl. Introduction into the case of missing teenager Maria Burton. Pupils use a variety of different sources to create an evidence log to pass onto the CPS. They will use problem solving skills to be able to work through the clues to solve the case using Maria's past locations, social media posts, witness statements and much more.

	This unit assumes that pupils already have some prior experience in Python or a similar language, and the first lesson has a series of tasks designed to revisit the basic skills already covered. Pupils then use For loops and compare their use with While loops, before moving on to arrays (lists). This unit is designed to take pupils right up to a point where a GCSE in Computing can pick up and should provide ample experience of programming in order to confirm any decision to pursue Computing as a GCSE option.	**Unit 4 HT4/HT5 Spreadsheets** The unit is centred around creating numerous Spreadsheets and is used to continue the skills that they learnt from spreadsheets in Year 7. Within this unit students will be expected to complete basic formatting and calculations including absolute cell reference and auto fill. They will also learn how to filter and sort data, use if statements, lookups and create graphs and charts based upon data within a spreadsheet. This unit of work will help students have the foundation knowledge to complete component 2 of the BTEC DIT qualification.			
Programme of Study	**HT1** Computational thinking and problem solving	**HT2** Python: next steps	**Unit 3** Logic Gates & Binary	**HT4** Spreadsheets	**Unit 5** Computer Forensics	
Key Assessments	Unit 1 and Unit 2 will have the following: • Key word test • POP task • End of unit knowledge test		Unit 3 and Unit 4 will have the following: • Key word test • POP task • End of unit knowledge test		Unit 5 will have the following: • Key word test • POP task • End of unit knowledge test	
Key skills	• Explain what decomposition is • Explain what pattern recognition is • Explain what abstraction is • Explain what a flowchart and algorithm are • Able knowledge on decomposition to look for similarities within a problem • Able knowledge on pattern	• Use data types correctly and convert between them when necessary • Write programs that use a loop to repeat a section of code • Write programs that use lists (known as 'arrays' in some languages) • Create and use a function with or without parameters • Find and debug syntax errors • Look at a given section of code and describe its function	• Understand the logic gates AND, OR and NOT • Understand what truth tables are • Complete truth tables using logic gates • Convert binary to denary and denary to binary • Add to binary numbers • Convert hexadecimal to denary • Convert denary to hexadecimal	• Use AutoFill to replicate calculations in your spreadsheet. • Use the basic functions SUM, AVERAGE, MIN and MAX in a spreadsheet. • Sort a spreadsheet and apply a basic filter with help. • Create an if statement • Create a lookup • Create a bar and pie chart.	• Explain what data digital devices store about their users • Understand how locations are always being tracked by the apps on mobile phones • Understand the ethical issues of online adverts • Explain what is metadata • Understand what brute force attack is • Identify ways in which online grooming can be avoided	

	• recognition to break down a problem • Able knowledge on abstraction to focus on only the important parts of a problem • Create flowcharts based upon different scenarios • Create pseudocode based upon different scenarios		• Convert hexadecimal to binary • Convert binary to hexadecimal			
Links to careers	• Programmer • Network system administrator • Program analyst • Web developer • Computer systems engineer	• Software developer • Programmer • Technical author • User experience designer (UX) • Systems analyst • App developer	• Digital engineer • Software engineer • Programmer • Network manager • Debugger • Programme tester	• Software development & Finance • Data analysis • Accountant	• Crime scene investigator • Cyber security engineer • Forensic computer analyst • Data analysist	