

Year 7 Computer Science	Unit	Substantive Knowledge	Disciplinary Aim	Cultural Capital
Term 1 HT 1	Kodu Micro:bit	<p>Understand the importance or sequencing instructions in the correct order</p> <p>Know how to program objects using WHEN & DO</p> <p>Understand the need for indentation when planning and producing instructions</p> <p>Know how to write simple Pseudo Code</p>	<ul style="list-style-type: none"> Sequence instructions to get kodu moving using the micro:bit using WHEN & DO Plan and produce pseudo code that shows consideration for indentation Display a customised pattern on the micro:bit Change the settings on game objects <p>Assessment: Students will produce pseudo code for a game object to showcase their ability to use the correct terminology and indentation when designing code.</p>	<p>Key words: sequence, when & do, indentation and pseudo code.</p> <p>Extra-curricular: Kodu can be downloaded free to any pc and students are encouraged to download and follow the built in tutorials.</p> <p>iDEA Bronze Award: Intro to gaming (8)</p>
Term 1 HT 2	Booking System	<p>Understand the difference between Formula and Functions</p> <p>Know how to use a spreadsheet model to make prediction by altering data</p> <p>Understand the need for a clear user interface design</p>	<ul style="list-style-type: none"> Demonstrate an understanding of cell referencing Use formula to make calculations Use the IF function to identify profit or loss Use functions including SUM, MIN, MAX, AVERAGE and COUNTIF Format a spreadsheet to enhance its appearance including the use of conditional formatting and spinners Add a key/legend to a spreadsheet and create a chart to display data <p>Assessment: Students will produce a booking system applying the taught formula, functions, formatting and other spreadsheet features.</p>	<p>Key words: spreadsheet, cell, row, column, formula, function, formatting and conditional formatting.</p> <p>Extra-curricular: Spreadsheet software can be found online via the students office 365 account. Students can apply their learning by producing a spreadsheet to show a shopping list of desired goods, their prices and apply formula to calculate the total.</p> <p>iDEA Bronze Award: Colours (10)</p>
Term 2 HT 1	RPI Car	<p>Know how to connect to a Raspberry Pi using Wi-Fi and VNC</p> <p>Know how to connect components to the Raspberry Pi's GPIO pins</p> <p>Use Block programming to control components connected to the GPIO pins</p> <p>Understand the need for 'variables' and the 'forever' commands in programming</p>	<ul style="list-style-type: none"> Use the scratch interface to design a car racing game background and sprite Program sprites using a forever loop to ensure the sprite can move Use variables to keep score of the number of lives Program variables to change when conditions are met <p>Assessment: Students will plan the sequence of traffic lights and turn into pseudo code. Students will use their plan and implement in Scratch using the RPi GPIO pins and LED's.</p>	<p>Key words: sprite, background, object, costume, variable, forever, GPIO pins, breadboard, jumper wire, LED, Wi-Fi, Raspberry Pi and VNC viewer.</p> <p>Extra-curricular: The Raspberry Pi website contains a number of tutorials, some with and some without the use of a Raspberry Pi.</p> <p>iDEA Bronze Award: Automation (20)</p>

Term 2 HT 2	Python Intro	<p>Know how to assign and change the content of variables</p> <p>Know how to use selection to give different outputs depending on the condition</p> <p>Understand the need for different data types, procedures and the effects of concatenation</p>	<ul style="list-style-type: none"> • Use print and input commands • Store data in variables selecting the appropriate data type • Use IF, ELIF and ELSE to respond accordingly based on the conditions that has been met • Write and call procedures <p>Assessment: Students will be given 10 programming challenges that will allow them to showcase their ability to program the taught technique.</p>	<p>Key words: print, input, data type, string, integer, variable, assignment, selection and procedure.</p> <p>Extra-curricular: The Raspberry Pi website contains a number of tutorials, some with and some without the use of a Raspberry Pi.</p> <p>iDEA Bronze Award: Python Intro (20)</p>
Term 3 HT 2	Virtual Pet	<p>Understand, interpret and produce pseudo code</p> <p>Understand the importance of indentation when producing pseudo code</p> <p>Know how to implement pseudo code using the scratch programming language</p> <p>Understand a range of programming concepts</p>	<ul style="list-style-type: none"> • Plan and produce pseudo code that shows consideration for indentation • Use variables to store data • Make use of broadcasts to allow objects to communicate • Create list to store data and randomly access term in the list <p>Assessment: Students will be given 10 pseudo code challenges that will allow students to showcase their ability in produce and interpreting pseudo code.</p>	<p>Key words: variable, list, broadcast, sprite, object, pseudo code.</p> <p>Extra-curricular: The code club website contains a number of scratch tutorials covering a range of levels.</p> <p>iDEA Bronze Award: Problem Solving (5)</p>
Term 3 HT 2	Cybercrime	<p>Understanding the techniques criminals use to carry out phishing attacks including how to spot and prevent against phishing attacks</p> <p>Know different types of Malware and the steps needed to prevent against malicious software.</p> <p>Understand the main points from a range of computer related legislation.</p>	<ul style="list-style-type: none"> • Give examples of phishing techniques and produce some guidance to help individuals spot such attacks • Explore the idea of ‘personal data’ and the laws that exist to prevent against data misuse. • Explore legislation effecting computer misuse (hacking) and copyright • Suggest ways to improve health and safety when working with computers <p>Assessment: Students will complete an online quiz covering the content from this unit of work.</p>	<p>Key words: malware, virus, worm, DOS, DDOS, brute force attack, Trojan horse, spyware, ransomware, copyright, permission, hackling, illegal, health and safety, repetitive strain injury, eyestrain.</p> <p>Extra-curricular: Explore computer related laws that exists to protect users through the BBC bitesize website. Be sure to take the test when you finish!</p> <p>iDEA Bronze Award: Cyberspies and Safe Online (20)</p>