Stratford
School Academy

Computer Science

Overview of the year:	Ways to consolidate and extend your learning in Computer Science/ICT:
This year, students start off learning Data modelling techniques using a Spreadsheet package. Student's re-visit Python programming next steps from the previous academic year, however the focus this time is advanced features of Python. For the third topic students are introduced to computer networks and data representation in a network. Students will appreciate how computer networks are an integral part of modern society. The last topic for the year is Algorithm and Programming. In this unit students will revisit fundamental concepts like sequence, selection, iteration, and variables from the perspective of algorithms, pseudocode and flowcharts. Students will also have the opportunity to code their algorithms in a programming language to test the usability and functionality of their algorithms.	TOP READ: look out for information and articles shared on Microsoft Teams. These links will be directly relevant to topics being taught. Teachers will be posting articles and videos here. TOP YOUTUBE CHANNEL: Craig and Dave Computer Science channel on YouTube. Techquickie ICT and Computer Science channel TOP FAMILY VISIT: The National Museum of Computing, Block H, Bletchley Park, MILTON KEYNES. All the resources can be found here: https://www.tnmoc.org/learning Why not subscribe to or read articles on Computer Science and ICT from the world-renowned university Massachusetts Institute of Technology. All resources can be found here: https://news.mit.edu/topic/computers TOP WEBSITE: Visit Teach-ICT.com for support with ICT and Computer Science based work and resources. Students will need to ask their teachers for username and password to this website.

Half Term	Unit title	Knowledge	Skills	Assessment
1	Data Modelling with Spreadsheets	Knowledge on the principles of creating and formatting spreadsheets to produce and use complex computer models. Explore formula, functions, and other features of Microsoft Excel including Macros.	Develop advanced formatting skills in a spreadsheet application. Write complex formula. Use advanced functions and IF statements	Formatting techniques Formula Functions If statements, Vlookup
2	Python programming (the next steps).	Knowledge on the following programming constructs: sequence, selection, and iteration	Proficiency in Kodu. Create and alter shapes in Kodu. Change properties of an object. Program objects to create a game.	Sequence, Selection, Iteration Visual programming environment (Kodu)
3	Computer Networks	Knowledge and understanding of different Network topologies, devices and also client server and peer to peer networks.	Recommend network based on user requirements. Recommend devices and equipment based on user needs. Calculate data download time, connection speed etc.	Network topologies, devices, client server, peer to peer networks and data transmission and connection speeds.
4	Algorithms and programming	Knowledge on the following programming constructs: sequence, selection, iteration, variables, arrays, pseudocode and flowcharts Understanding of IDE's and error handling	Proficiency in text-based programming language and IDE. (Python and PyCharm) Application of sequence, selection, and iteration programming constructs. Debug programs	Sequence, Selection, Iteration, Variables, Arrays, Pseudocode and Flowcharts. Integrated Development Environments and error handling
5	Algorithms and programming (continued) and revision	Complete Introduction to python unit and revisit previous units	Algorithms and programming unit and revisit previous units	Algorithms and programming unit and revisit previous units
6	Revision/ End of year exam	End of year exam on all topics	End of year exam on all topics	End of year exam on all topics