Coding Constructs①
Decomposition②
Variables④
Writing to File③
Binary Logic⑤
SQL Programming⑥
Algorithms⑦
The IDE⑧
Systems⑨
Primary Memory ⑩
Translators⑪

Chronological Understanding		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Safeguarding								Students undertake a module on sexting and inappropriate content on phones.		Students undertake a module on using technology responsibly.		
		PT 7 e-Safety: Safer Internet Day + CEOP report concerns about content/ contact Basic IT skills and word processing culminating in writing a small document about themselves. Computer Art in paint, and programming toy mimics.	e-Safety: Safer Internet Day + CEOP report concerns about content/ contact Using the Internet Links, Blogs, Logging in/out, e-Safety, uploading images, searching **Turtle Logo – Textease Unit** Draw shapes, squares, distances etc. Repeat command to get it in one command Programming turtle logo and scratch	Internet Research and Communication, Email communication – bookmark pages, safety, behaviour online, share web pages, research using online tools, and digital footprint. Word processing II Undo, redo, selecting texts, changing cases, aligning text, copy, paste, inserting images, formatting text, screenshots.	Animation And Photo Stories Word processing III Select edit text indifferent ways, tables, columns, margins, layouts, apply effects to an image Manipulate tables, hyperlinks, spell checking Write a program to achieve a set goal, using logical sequence, debugging, iteration, variables and adjust them. Duplicate tool, and create a quiz for assessment.	Internet research and web page design Images, text, hyperlinks, Share a web page Advanced features of googles web search Controlling devices, sequence, symbols in flow charts, inputs, create program from sequence. Multiple inputs and outputs. Subroutines and decisions.	Spreadsheets I Enter cell values, locate cells, formula (sum) edit formula in cells, avg, min, max graphs. Film making Plan and write a script, use a digital video camera, plan questions, import files onto video editing software. Kodu Navigate application, create instructions, move character round track, create path for character to follow.	Introduction to learners on all systems and how to Access Insight, OneDrive, Teams, email, and basic use of office 365 applications by getting the users to login, save and use all school applications. **Binary.** Binary conversions: •B_2-B_{10}, B_{10}-B_2 Using Scratch application (Block Based Coding) students are introduced to programming constructs① iteration, sequence and selection. Students use the application to create simple programs that gain in complexity from basic movement up to receiving and storing inputs. Control Technology Students gain understanding of the algorithm shapes⑦ required to design a flow chart and their	Introduction to Binary Logic Circuits⑤ to understand small electrical circuits. Students work to create hand drawn small circuits and translate the diagram to truth tables. **Binary.** Binary conversions: •B_2-B_{10}, B_{10}-B_2 •**Circuits and binary Logic Algebra** Text based programming, with variables, selection, sequence, expressions, and data types. Decomposition in Python② Students write a variety of programs that can show decomposition, and students able to explain what is happening.	Revisit with added complexity of Binary Logic circuits⑤. Students work to create hand drawn small circuits to two levels and 3 inputs and translate the diagram to truth tables. **Binary.** Binary conversions: •B_2-B_{10}, B_{10}-B_2 •Circuits and binary Logic Algebra to 2 levels (extension is 3 inputs ABC) •**Binary Shifts** •**Binary Addition** Write to file③ project. Students create their own storyboard based on variables and strings and every time the program runs a different story is written to a text file and saved. Students develop this to have a complete understanding of the acronym PRAT in terms of coding decomposition. **TURTLE** Students learn basic algorithms to search and sort data.	Students undertake coding technique skills in depth①③④⑤⑥ Student's carryout the exam content Binary Logic⑤ understanding. Students code programs with planning evident using algorithms①②④ flow charts⑦ and pseudocode and understand why it's needed. Students add robust program design to their work, and understand reasons why it's needed. Students undertake a Mock project (A stock control task) in preparation for their programming project NEA①②③④⑦ Students undertake the real programming project for their GCSE course implementing techniques and learning already learned for many hours①②③④⑦	Students learn data representation or images and sound, and character sets. Students explore the Python IDE⑧ application with regard to benefits and drawbacks of different translators. Compare and contrast translators. Students to understand different systems⑨ and their implication on hardware. Students learn a detailed understanding of how the von Neumann CPU architecture works, including running programs and fetching instructions from primary memory⑩ through to their processing in the correct registers, and contrast characteristics of the CPU. This culminates in being able to write at assembly language level on Little man Computer for the processes involved in instruction execution on a Von Neumann processor. ⑧⑩⑪. Students learn about types of Memory, primary and secondary and the advantages/disadvantages of both, comparing like for like technologies, ROM⑨ vs Cache vs RAM⑩, MHDD vs SSD. Students learn about network physical and logical topologies, compare and contrast the benefits/pitfalls of wired vs wireless in terms of performance and

			Draw lines different lengths, turn a turtle Draw shapes Use repeat to iterate algorithms					meaning. This leads on to sub programs (Decomposition②) and the benefits of. The application is Flowol and students use a range of mimics to solve different problems,		Students undertake a module on data representation of images and sound.		security. The internet and services is also learned, from DNS to VPN services. Students need to be able to contrast the threats available to network security and vulnerabilities⑥. Students to compare command line interfaces and GUI and the facilities offered by both, by researching the Linux and windows operating systems. Students' carryout a research project based on the ethical and legal implications of technology and companies storing their data with view to what the law says a company can hold, and the persons ethical view of how that data is treated and protected, up to and including the disposal of data/equipment.
								Various small projects allow for learning coding technique then a task to show understanding by application of the technique. Small program-based approach of techniques learned to test existing knowledge to develop & consolidate understanding. The basics of the project require students to understand the 3 parts that comprise a variable. The Rules for the naming section, and the data types④ string/float/integer for the value. The project is in Python (Textual Programming Language) Project starts at variable design, encompasses expressions, IDE & interface⑧, error handling, Constructs Selection and Sequence① In year 9 pupils should develop how to use turtle and its methods, finding associated data type methods, lists and indexing, decomposition② and file reading and writing③ skills.				

Litcham School All through Computing and ICT Curriculum Implementation.

Extra-Curricular

In addition to the above there is a Computer science / Electronics club afterschool on Thursdays