

Module/Unit of Learning	Taught During	What will students learn?	How are students challenged to become experts?	Links to other Subjects
System Architecture	Autumn – Term 1	In this unit, learners will gain an understanding and knowledge of how computer systems work. Starting with the building blocks of the microprocessor - logic gates - learners will discover how a computer system works and executes instructions		
Programming – Selection, Iteration and Subroutines	Autumn – Term 2	This extensive programming unit takes learners from being complete novices to having the confidence to tackle any GCSE level programming challenge. Essential programming theory is also interleaved into the practical elements of programming to provide tangible links between required knowledge and skills.	Students will be given the opportunity to solve significant problems using Python. Students may draw on some of the content in both components when engaged in Practical Programming	Maths
Computational thinking	Spring – Term 1	In this unit, learners explore the concept of computational thinking that underpins all algorithms. Learners then apply computational thinking to develop a number of algorithms and represent them in a variety of forms.		Maths Engineering

Data Representation	Spring – Term 2	This unit allows learners to gain the understanding and skills required for the data representation sections of the GCSE computer science exam. First, learners look at binary and hexadecimal numbering systems, how they work, and how to convert between bases. Then, learners explore different coding systems and find out how text, images, and sound are represented in computers. All lessons include worksheets to allow learners to explore each topic through practical application. (NOTE: there are three learning graphs)		Maths
Searching and sorting algorithms	Summer – Term 1	The main focus of this unit is on searching and sorting algorithms, though other topics are covered, such as computational thinking, flow charts, and tracing algorithms. Students will have opportunities to analyse, interpret, modify, and implement a range of algorithms.	During this unit of work students will be challenged to program the standard searching and sorting algorithms. They will also be given coded examples which need to be optimised/improved	Maths
Data bases and SQL	Summer – Term 2	This unit introduces learners to the world of databases and SQL. Learners explore the key terms used in a database and learn why relational databases are used to eliminate redundancy and inconsistencies that can occur in a flat file database. Next they explore increasingly challenging SQL commands where they retrieve, update and delete data in a relational database.		