Year 13 Computer Science

The Year 13 curriculum begins by focussing on the key skills required to succeed in the programming project which is worth 20% of the course. The programming project consumes a significant amount of time and is dedicated half of the lesson time until its completion by the Easter break. The final term is dedicated to revision of all the units covered, with a particular focus on exam practice and to preparing and practising the pre-release material for the practical programming exam.

Methods of deepening and securing knowledge:	
Retrieval practice	Retrieval tasks are often given at the start of each lesson to recap knowledge gained in the previous lesson.
Interleaving	Each unit's written assessment includes questions from any prior topics.
Concrete examples	When programming students are given concrete examples to demonstrate good programming techniques in order to solve problems.

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Topic(s)	**Programming Project** - Analysis **Unit 7 – Data Structures** - Queues - Lists - Stacks - Hash tables - Graphs - Trees - Vectors	**Programming Project** - Design and development **Unit 12 – OOP and Functional Programming** - Basic concepts of Object Orientated Programming - OOP design principles - Functional programming - Big data	**Programming Project** - Development **Unit 8 – Algorithms** - Recursion - Big-O notation - Searching and sorting - Graph traversal - Optimising algorithms - Limits of computation	**Programming Project** - Testing - Evaluation **Unit 10 – The Internet** - Structure of the Internet - Packet switching and routers - Security - TCP IP protocols - IP and subnet	**Study of the Preliminary Programming Release**	
Assessment	- Unit 7 written assessment	- Unit 12 Written assessment	- Unit 8 written assessment	- Unit 10 written assessment		

Independent learning:
Independent learning is a core part of learning and serves to support the learning in class, enrich the student experience and develop knowledge and skills. Each theory lesson will include a follow up Independent learning task for students to complete in their own study time. The students will also need to spend a considerable amount of time developing their independent programming project. Preparing for assessment is an essential part of each topic as each assessment allows teachers and students to see their progress. It is crucial that revision is completed so students can show what they know.