Knowledge & Concepts increase students depth/ challenge and build on previous learning where topics are revisted throughout their learning journey

|  |  | Year 10 (OCR) | Year 11 (AQA) | Year 12 | Year 13 |
|---|---|---|---|---|---|
| Half Term 1 | Topics | 1.1 Systems Architecture<br>2.2 Programming fundamentals | Units 3.1, 3.2, 3.3 & 3.4 | 2.1.1<br>2.1.2<br>2.1.3<br>2.1.4<br>2.1.5<br>2.2.1 Part a | 3 |
| | Knowledge | Demonstrate an understanding of computer systems & programming fundamentals. | Revise and testing of knowledge & understanding with exam Questions | Thinking Abstractly<br>Thinking Ahead<br>Thinking procedurally<br>Thinking logically<br>Thinking concurrently<br>Basic programming techniques | Completion programming project completion |
| Half Term 2 | Topics | 1.2 Memory and storage.<br>2.2 Programming fundamentals | Units 3.5, 3.6, 3.7 & 3.8 | 2.2.1 Part b | Revision Component 1 |
| | Knowledge | Demonstrate an understanding of computer Memory and storage. Continue with programming fundamentals. | Revise and testing of knowledge & understanding with exam Questions, Mock Exam | Programming constructs:<br><br>• Sequence, iteration, branching. Recursion, how it can be used and compares to an iterative approach.<br>• Global and local variables. Modularity, functions and procedures, parameter passing by value and by reference.<br>• Use of an IDE to develop/debug a program.<br>• Use of object-oriented techniques. | Structure and Function of Processor<br>Types of Processor<br>Input, Output and storage<br>Systems Software<br>Software Development<br>Types of Programming Language<br>Compression, Encryption and Hashing<br>Databases<br>Networks<br>Web Technologies<br>Data Types<br>Data Structures<br>Boolean Algebra<br>Computing Related Legislation<br>Ethic, moral and cultural issues |

|  |  | Year 10 | Year 11 | Year 12 | Year 13 |
|---|---|---|---|---|---|
| **Half Term 3** | Topics | 1.3 Computer networks, connections and Protocols. 2.2 Programming fundamentals | Past Papers 1 &2 | 2.2.3 | Revision Component 2 |
|  | Knowledge | Demonstrate an understanding of computer networks, connections and Protocols. Developing programming skills. | Revise and testing of knowledge & understanding with exam Questions, Mock Exam | Features that make a problem solvable by computational methods. <ul><li>Problem recognition.</li><li>Problem decomposition.</li><li>Use of divide and conquer</li><li>Use of abstraction.</li></ul> Learners should apply their knowledge of: <ul><li>Backtracking</li><li>data mining</li><li>heuristics</li><li>performance modelling</li><li>pipelining</li><li>visualisation to solve problems</li></ul> | Thinking Abstractly Thinking Ahead Thinking Procedurally Thinking Logically Thinking Concurrently Programming Techniques Computation Methods Algorithms |
| **Half Term 4** | Topics | 1.4 Network security | Past Papers 1 &2 | 3 Programming Project | Examination final prep |
|  | Knowledge | Identify and explain the various networks and there appropriate application. Develop an understanding and awareness of the importance of Cyber Security in protecting networks. | Revise and testing of knowledge & understanding with exam Questions, Mock Exam | Analysis of problem Design solution Develop coded solution Evaluate coded solution | Past paper questions |

|  |  | Year 10 | Year 11 | Year 12 | Year 13 |
|---|---|---|---|---|---|
| Half Term 5 | Topics | 1.5 Systems software | Identified areas of Recap | 3 Programming Project | Examination final prep |
| | Knowledge | Develop an understanding and awareness of the importance of Software in Computer systems. | Individual targeted revision. | Analysis of problem<br>Design solution<br>Develop coded solution<br>Evaluate coded solution | Past paper questions |
| Half Term 6 | Topics | 1.6 Ethical, legal, cultural and environmental impacts of digital technology. | Exam Paper 1 & 2 | 3 Programming Project | |
| | Knowledge | Identify and be able to discuss the wider impacts of digital technology showing a deep understanding of the issues. | Final Exam Revision | Analysis of problem<br>Design solution<br>Develop coded solution<br>Evaluate coded solution | |