Subject: Computer Science

Kay Stage 4 Curriculum Plan

Year: 10

Department Information:

Students follow the OCR Computer Science Course J277

Curriculum aims and intent:

Students will have the opportunity to study the different aspects of technology and computer science, with the intention that students will be able to progress to higher levels of study or to a professional career.

Throughout the two years, pupils will have the opportunity to develop their capability, creativity and knowledge in Computer Science. They will develop and apply analytic skills including problem solving through the programming units taught. Students will also interrogate how technology has an impact on safety, including new technologies such as AI and the mass collection of data.

Resources used to support learning:

BBC Bitesize
YouTube - Craig n Dave
w3schools
OCR Revision Guide

Home Learning:

Students are given homework for every lesson to watch a Craig and Dave video and make notes

Assessment:

Students will complete ten end of topic tests throughout years 10 and 11, alongside mock tests. These mock tests are:

Year 10:
Combination Paper 1 and 2 - Mock Test

How parents can help their child:

Encourage the students to complete their homework alongside using a revision guide.

Term	Summary of work being covered	Knowledge, Understanding and skills assessed	How the work is assessed	Career Links
1	1.1 Systems architecture Architecture of the CPU How common characteristics of CPUs affect their performance Embedded systems	What is the “architecture” of a CPU? What factors affect the CPU performance?	Unit 1.1 Assessment	Computer engineers designing processors for laptops and phones
2	2.1 Algorithms Abstraction Decomposition Algorithmic thinking Search and Sort Algorithms Trace table		Unit 2.1 Assessment	AI engineers creating recommendation systems and self-driving technology
3	1.2 Memory and storage RAM and ROM Virtual memory and secondary storage Units Binary conversion and addition Character sets, bitmaps and sound Compression	Why do computers have primary storage?	Unit 1.2 Assessment	Cloud engineers managing data in Microsoft Azure or AWS
4	2.2 Programming fundamentals Basic programming constructs Data types, operators and string manipulation File handling Records & SQL Arrays and sub-programs Random number generation		Unit 2.2 Assessment	App and web developers building software used every day
5	1.3 Computer networks, connections & protocols Types of networks Factors that affect the performance of networks Client-server & peer-to-peer The internet Star and mesh network topologies Protocols	What are the characteristics of LANs and WANs?	Unit 1.3 Assessment	Network engineers keeping schools, hospitals and businesses connected
6	2.3 Producing robust programs Input validation Defensive design considerations Maintainability and refining algorithms Types of testing and errors Suitable test data		Unit 2.3 Assessment Mock Combination Paper 1 and 2	QA testers finding bugs before software is released