**Year 10 Computer Science**

|  | **Topic** | **Key concept – what do I want the students to learn from this unit?** | **What knowledge will they acquire?** |
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| **Year 10 Computing** | | | |
| **Autumn 1** | 2.1 Algorithms and 2.2 programming techniques | **How searching and sorting algorithms can be used in programming and how to develop functions and procedures** | **Binary, linear searches, bubble merge and insertion sorts, interpret, correct and complete algorithms, file handling, functions and procedures and use of arrays** |
| **Autumn 2** | 1.4 Wired and wireless networks | **How networks are structured and transfer data** | **LAN and WAN and factors affecting networks, peer-to-peer and client networks and hardware, the internet, virtual networks** |
| **Spring 1** | 1.5 Network topologies, protocols and layers | **The 5 levels of network protocols and how they work** | **Star and mesh topologies, Wi-Fi, Ethernet and IP addressing, TCP.IP and HTTP.HTTPS, FTP, POP, IMAP and SMTP** |
| **Spring 2** | 2.3 Producing robust programs | **Re-visiting 2.1 and 2.2 core programming techniques** | **Binary, linear searches, bubble merge and insertion sorts, interpret, correct and complete algorithms, file handling, functions and procedures and use of arrays** |
| **Summer 1** | 2.4 computational logic and 2.5 translators and facilities of languages | **Re-visiting 2.4 programming techniques and identify the different levels of programming language and purpose of translators** | **Transistors, logic gates, different levels of programming language, purpose of translators, characteristics of assembler, complier and interpreter** |
| **Summer 2** | 1.6 systems security and 2.2 programming techniques | **Identify threats and how to prevent vulnerabilities to computer systems, whilst using SQL to search for data** | **Forms of attack, threats posed, identifying and preventing vulnerabilities, how to use SQL to search for data** |