**Year 10 - GCSE Computer Science**

Students will focus on the content for Paper one, building on their knowledge of how computers work developed in Year 9. Students will also use the skills and knowledge of Python and other programming softwares, covered in Yr 7-9, and build upon them to develop their use of programming software Brain In Gears are used to help students recall previous learning and understanding of different aspects of how a computer works. Most tasks can be completed through Google Classroom when subject specific software isn't required.

| Year 10 Curriculum | Autumn Term 1 | Autumn Term 2 | Spring Term 1 | Spring Term 2 | Summer Term 1 | Summer Term 2 |
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| Topics | **Systems Architecture**<br>● Purpose of the CPU<br>● Von Neumann Architecture<br>● Common CPU Components and their functions<br>● CPU Performance (cache/cores/clock speed)<br>● Embedded Systems<br><br>**Memory and Storage**<br>● Differences between RAM and ROM<br>● Purpose of RAM and ROM<br>● Virtual Memory<br>● Flash Memory | **Storage**<br>● Need for secondary storage<br>● Common types of storage (optical/magnetic/solid state)<br>● Suitable storage devices for different applications<br>● Advantages, disadvantages and characteristics<br><br>**Networks and Topologies**<br>● Types of Network (LAN/WAN)<br>● Factors affecting network performance<br>● Client-Server / Peer-to-Peer<br>● Network Hardware<br>● The Internet<br>● Star and Mesh topologies | **Units**<br>● The units of data storage<br>● Binary/decimal conversion<br>● Data capacity and calculation of data capacity requirements.<br><br>**Wired and Wireless Networks, Protocols and Layers**<br>● Modes of connection (wired/wireless)<br>● Encryption<br>● IP and MAC addressing<br>● Standards<br>● Common protocols<br>● The concept of network layers | **Data Storage**<br>● Binary/denary conversion<br>● Binary addition<br>● Denary/hexadecimal conversion<br>● Binary shifts<br>● Binary representation of characters<br>● Relationships between bits per character and character sets<br><br>**Systems Software**<br>● The purpose and functionality of operating systems.<br>● The purpose and functionality of utility.<br>**Python Programming Skills -** One lesson a week to develop programming skills | **Data Storage**<br>● How images are represented<br>● Metadata<br>● Colour depth and resolution and their effects on quality and file size<br>● Sampling sound and storing in digital form<br>● Sample rate, duration and bit depth, and the effect on quality and file size<br>● The need for compression<br>● Types of compression<br><br>Network Security<br>● Forms of attack<br>● Threats posed to networks<br>● Identifying and preventing vulnerabilities | **Ethical, Legal, Cultural and Environmental Impact**<br>● Impacts of digital technology on wider society<br>● Legislation relevant to Computer Science (Data Protection Act, Computer Misuse Act, etc.)<br><br>**End of Year Exam Revision Python Programming Skills -** One lesson a week to develop programming skills |

| Assessment | Python Programming Skills - One lesson a week to develop programming skills | Python Programming Skills - One lesson a week to develop programming skills | Python Programming Skills - One lesson a week to develop programming skills | | Python Programming Skills - One lesson a week to develop programming skills | |
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| | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment. | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment. | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment. | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment. | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment. | End of unit assessment, based on exam style questions for each topic. Whole class feedback given on each end of unit assessment.  End of Year exam |

## Independent Work

Independent work is provided each week, with either one or two worksheets. Worksheets will be a mixture of recall and exam practice to develop technique in answering exam questions. Students are given a week to complete these worksheets and are then marked at the beginning of the lesson using a green pen, thus allowing students to correct their answers as necessary. All homework scores are recorded in order to check progress and look for issues with a particular topic. Students will be expected to develop revision resources for assessments and use these for their end of year exam.