

## Year 10 & 11 Computer Science – Outline Programme of Study

	Year 10 Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Big ideas/ topics	3.2 Programming	3.2 Programming	3.1 Fundamentals of algorithms	3.2 Programming	3.3 Fundamentals of data representation	3.4 Computer Systems
Key Knowledge	<ul style="list-style-type: none"> <li>- Data types</li> <li>- Programming concepts</li> <li>- Arithmetic operations in a programming language</li> <li>- String handling operations in a programming language</li> </ul>	<ul style="list-style-type: none"> <li>- Relational operations in a programming language</li> <li>- Boolean operations in a programming language</li> <li>- Data structures</li> <li>- Input/output</li> </ul>	<ul style="list-style-type: none"> <li>- Representing algorithms</li> <li>- Efficiency of algorithms</li> <li>- Searching algorithms</li> <li>- Sorting algorithms</li> </ul>	<ul style="list-style-type: none"> <li>- Random number generation in a programming language</li> <li>- Structured programming and subroutines (procedures and functions)</li> <li>- Robust and secure programming</li> </ul>	<ul style="list-style-type: none"> <li>- Number bases</li> <li>- Converting between number bases</li> <li>- Units of information</li> <li>- Binary arithmetic</li> <li>- Character encoding</li> <li>- Representing images</li> <li>- Representing sound</li> <li>- Data compression</li> </ul>	<ul style="list-style-type: none"> <li>- Hardware and software</li> <li>- Boolean logic</li> <li>- Software classification</li> <li>- Classification of programming languages and translators</li> <li>- Systems architecture</li> </ul>
	Year 11 Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Big ideas/ topics	3.5 Fundamentals of computer networks	3.6 Cyber Security	3.7 Relational databases and SQL 3.8 Ethical, legal and environmental impacts of digital technology on wider society and privacy	<b>Revise/Recap</b> 3.1 to 3.2 – Paper 1 Past paper practice	<b>Revise/Recap</b> 3.3 to 3.8 – Paper 2 Past paper practice <b>Examinations</b>	
Key Knowledge	<ul style="list-style-type: none"> <li>- Advantages and disadvantages of computer networks</li> <li>- Main types of computer network</li> <li>- Purpose and use of common network protocols</li> <li>- Methods of network security</li> <li>- 4 layer TCP/IP model</li> </ul>	<ul style="list-style-type: none"> <li>- Fundamentals of cyber security</li> <li>- Cyber security threats</li> <li>- Methods to detect and prevent cyber security threats</li> </ul>	<ul style="list-style-type: none"> <li>- Relational databases</li> <li>- Structured query language (SQL)</li> <li>- Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy</li> </ul>	<ul style="list-style-type: none"> <li>- Revisiting and revising the Paper 1 topics: 3.1 Fundamentals of algorithms and 3.2 Programming.</li> <li>- Completing previous Paper 1 exam questions.</li> </ul>	<ul style="list-style-type: none"> <li>- Revisiting and revising the Paper 2 topics: 3.3-3.8.</li> <li>- Completing previous Paper 2 exam questions.</li> <li>- Complete both exams.</li> </ul>	

### Further information and reading list

**Exam board:** AQA GCSE Computer Science 8525: <https://www.aqa.org.uk/subjects/computer-science-and-it/gcse/computer-science-8525>

**Textbook:** AQA GCSE (9-1) 8525 Computer Science: <https://www.pgonline.co.uk/resources/computer-science/gcse-aqa/gcse-aqa-computer-science-8525/>

**Recommended revision guide:** GCSE Computer Science AQA Revision Guide: <https://www.cgpbooks.co.uk/secondary-books/gcse/computer-science/coar42-gcse-computer-science-aqa-revision>

**Useful websites:** YouTube tutorials: <https://www.youtube.com/c/craigndave/playlists> , AQA subject specific vocabulary: <https://filestore.aqa.org.uk/resources/computing/AQA-8525-SSV.PDF> and AQA command words: <https://filestore.aqa.org.uk/resources/computing/AQA-8525-CW.PDF>

### Ways to support and extend student learning in this subject

#### Support guidance:

- All lessons and resources are posted to the students Google Classroom for Computer Science. The assignments should be revisited to consolidate knowledge and to revise.
- Learn the subject specific vocabulary: <https://filestore.aqa.org.uk/resources/computing/AQA-8525-SSV.PDF>
- Use the Craig 'n' Dave YouTube tutorials to revisit topics and consolidate learning: <https://www.youtube.com/c/craigndave/playlists>

#### High-achieving guidance:



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Previous exam papers with corresponding answers and commentary are available for students to work through independently on the AQA website: <https://www.aqa.org.uk/subjects/computer-science-and-it/gcse/computer-science-8525/assessment-resources>

- Grade 8 – 9 Resource Pack: All Exam Boards. A comprehensive PDF document with tips and advice on how to achieve the top grades. Available in the Google Classroom for Computer Science.
- Isaac Computer Science: <https://isaacomputerscience.org/topics/gcse?examBoard=all&stage=all#aqa>