

## Year 12 COMPUTER SCIENCE Curriculum Map

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Term	Topic/Unit title	Essential knowledge and skills  (what students should know and understand and be able to do by the end of the unit/topic)
<b>Autumn 1</b>	1.5 Legal, moral, ethical and cultural issues  2.2.1a Programming techniques - Programming constructs: sequence, iteration, branching  1.1 The characteristics of contemporary processors, input, output and storage devices	<a href="https://www.ocr.org.uk/Images/170845-specification-accredited-as-level-gce-computer-science-h046.pdf">https://www.ocr.org.uk/Images/170845-specification-accredited-as-level-gce-computer-science-h046.pdf</a>
<b>Autumn 2</b>	1.4.1 Data Types  1.2 Software and software development  2.2.1 Programming techniques  1.4.2a Arrays	
<b>Spring 1</b>	PPE1  1.3.1 Databases  2.2.2 Software Development  1.3.2 Networks	
<b>Spring 2</b>	1.4.2b Data Types – properties of stacks and queues	

	1.3.3 Web Technologies 2.3 Algorithms	
<b>Summer 1</b>	1.4.3 Boolean Algebra 2.1 Elements of computational thinking A Level topic of abstract data types	
<b>Summer 2</b>	Y12 PPE preparation Addressing weaknesses from the PPE including recapping any Y12 topics as necessary	

**Year 13 COMPUTER SCIENCE Curriculum Map 2022-23**

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<b>Term</b>	<b>Topic/Unit title</b>	<b>Essential knowledge and skills (what students should know and understand and be able to do by the end of the unit/topic)</b>
<b>Autumn 1</b>	1.2.4a,e Types of programming language- Paradigms; Object Oriented Programming  2.2.1f Programming Techniques – OO techniques  1.2.2ef Applications Generation – Stages of compilation; linkers, loaders and libraries  1.4.2bc Data structures – hash tables; create, traverse, adding and removing data from HT  1.3.1d Different uses of hashing  NEA (non-exam assessment) commences	<a href="https://www.ocr.org.uk/Images/170844-specification-accredited-a-level-gce-computer-science-h446.pdf">https://www.ocr.org.uk/Images/170844-specification-accredited-a-level-gce-computer-science-h446.pdf</a>

<p><b>Autumn 2</b></p>	<p>NEA Continues</p> <p>2.3.1bcdf Algorithms – complexity (including bigO notation); suitability for a task and dataset; comparison of the complexity of algorithms; the A* Algorithm</p> <p>2.2.1b recursion</p> <p>1.3.1bc RLE and dictionary encoding for lossless compression; Symmetric and Asymmetric encryption</p> <p>1.3.3cd Network Security and threats, use of firewalls, proxies and encryption; Network Hardware</p> <p>1.3.2ac-f Databases – indexing; normalisation to 3NF; SQL; Referential Integrity; Transaction processing, ACID, Record locking and redundancy</p> <p>1.3.4b-d Search engine indexing; PageRank algorithm; Server and client side processing</p> <p>1.4.1g-l Data Types – normalisation of floating point numbers; Floating point arithmetic; bitwise manipulation and masks</p> <p>1.4.3ce Boolean Algebra – use of rules to derive or simplify statements in Boolean algebra; logic associated with D type flip flops, half and full adders</p>	
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<b>Spring 1</b>	NEA Concludes 1.1.1d The use of pipelining in a processor to improve efficiency 1.1.2b GPUs and their uses 1.2.4d addressing modes PPE Preparation	
<b>Spring 2</b>	2.2.2 Computational methods Preparation for final exams	
<b>Summer 1</b>	Preparation for final exams	