

KS5 Computer Science Curriculum Map



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Paper 1: Programming recap Paper 2: Data Representation	Paper 1: Programming Paper 2: Hardware	Paper 1: Advanced programming Paper 2: Hardware	Paper 1: Programming tasks Paper 2: Consequences of computing and networks	Paper 1: Abstraction and automation Paper 2: Data structures	Paper 1: Object Orientated programming NEA: Analysis
Year 12	Paper 1 Content 1 to 4: Data Types Data Structures Programming Practice Selection Assignment Iteration Selection Assignment Iteration Nested selection and iteration is also included. 5: Operators Random Relational and Boolean 6 – 7: String Functions	Paper 1 Content 1 and 2: Intro to functions Programming Practice Global Variables 3 and 4: Exception handling 5-7: Consolidation on all aspects of programming learned so far..	Paper 1 Content 1: Trial 1 assessment 2 to 5: Abstract data types Dynamic data types Reading and writing to a file Reading and writing to a file - practice Binary files in Python and practice Dynamic / static data structures 6 and 7: Programming practice	Paper 1 Content 1 to 5: Extended programming set tasks: Paper 2 Content 2: Communication basics: Serial parallel and rates including latency, Synchronous and asynchronous data transmission, Protocols. 3: Networks: LAN WAN hardware and topologies Client server and peer to peer, Wireless.	Paper 1 Content 1: Abstraction and automation Breaking down problems Abstraction including levels Automation and questions 2 and 3: Finite state machines Intro Transition tables and differences Mealy Machines	Paper 1 Content 1 and 2: Concepts of OOP and comparisons Class Diagrams and inheritance Practice Polymorphism Aggregation methods 3 to 6: OOP practice NEA 1: Project Preparation 2: NEA Analysis Section

<p>8: Programming assessment</p> <p>Paper 2 Content</p> <p>1: Number systems theory, Putting it into practice, Review of number bases, More conversions.</p> <p>2: Program some conversions, Addition and multiplication, Two's compliment, Fixed point, Floating Point</p> <p>3: More Floating Point, Underflow and Overflow and Normalisation and Precision, Consolidation.</p> <p>4: ASCII, Error Checking 1, Error Checking 2, Bitmap vs vector graphics.</p> <p>5: Sound, Methods of Compression</p> <p>Methods of Compression</p> <p>6: Coding compression methods</p>	<p>2: Levels of languages including writing assembly language (briefly).</p> <p>3: Logic gates introduction and new gates.</p> <p>4: Boolean algebra including simplification of statements.</p> <p>5: Continue Boolean algebra then Adders and D Type Flip Flop.</p> <p>6: Internal hardware</p> <p>7: Revision for trial 1 exam.</p>	<p>2: Review of assessment, consolidation work.</p> <p>3: Fetch Decode Execute cycle and the performance of processors.</p> <p>4: Processor instruction set including: Interrupts, Machine code instruction set, Direct and indirect addressing, Different operations, Assembly language instruction set</p> <p>5: External hardware: Intro to external devices Laser vs Inkjet printers Harddrives vs SSDs, DVD BluRay and CDs</p> <p>6: Unit revision and assessment</p>	<p>4: IP Addressing, NAT, Public and Private IP, Port forwarding, IPV4 and 6, DHCP and DNS, Structure of packets and packet switching</p> <p>5: Firewalls VPNs and Proxys</p>	<p>2: Queues and stacks including RPN.</p> <p>3: Graphs and trees</p> <p>4: Graphs and Trees including traversal</p> <p>5: Hashes, dictionaries and vectors</p> <p>6: Dijkstra's algorithm</p>	
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7: Introduction and
Caesar Cipher,
Frequency analysis
and Python
programming,
Transposition and
Verman Cipher,
Encryption Essay
8: Unit revision and
assessment

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Paper 1: trial paper preparation NEA: Design and programming	Paper 1: Exam paper preparation NEA: Programming and testing	Paper 1: Exam paper preparation Paper 2: Networks and regular expressions	Paper 1: Exam paper preparation Paper 2: Databases	Paper 1: Exam paper preparation Paper 2: Functional programming	
Year 13	Paper 1 Content <ul style="list-style-type: none"> Recapping of previous learning about object-oriented programming in Python. (1 lesson) Using 2025 skeleton code to prepare for trial 1. Checking student annotations. Class diagrams relating to the skeleton code Section D programming task Section C theory questions relating to skeleton code Section B programming task Section D programming task Section D programming task 	Paper 1 Content <ul style="list-style-type: none"> Provide student with new current skeleton code- Time to become accustomed to preliminary material, skeleton code and add annotations. (2 lessons) Class diagrams relating to the skeleton code Section D programming task Section C theory questions relating to skeleton code Section B programming task Section D programming task Section D programming task Section D programming task 	Paper 1 Content <ul style="list-style-type: none"> Recapping earlier learning relating to algorithms and non-OOP programming concepts (1 lesson) Recapping of previous learning about object-oriented programming in Python. (1 lesson) Section D programming task Section C theory questions relating to skeleton code 	Paper 1 Content <ul style="list-style-type: none"> Section D programming task Section C theory questions relating to skeleton code Section B programming task 	Paper 1 Content <ul style="list-style-type: none"> Recapping earlier learning relating to algorithms and non-OOP programming concepts (1 lesson1) Recapping of previous learning about object-oriented programming in Python. (1 lesson1) Section D programming task Section C theory questions 	

<ul style="list-style-type: none"> • Section C theory questions relating to skeleton code • Section B programming task • Section D programming task • Trial 1 prep <p>NEA Design and programming</p>	<p>NEA Programming and testing</p> <ul style="list-style-type: none"> • Section C theory questions relating to skeleton code • Section B programming task • Section D programming task 	<ul style="list-style-type: none"> • Section B programming task • Section D programming task • Section C theory questions relating to skeleton code • Section B programming task <p>Paper 2 Content</p> <p>1: Recap FSM, turing machine, regular languages 2: Maths for regular expressions, Big O. 3: Internet 4: Internet security 5: Encryption - public/private key, Malware and protection 6: TCP-IP Model, Protocols - FTP, SSH, POP3 etc, Questions and confirming knowledge</p>	<ul style="list-style-type: none"> • Section D programming task • Section C theory questions relating to skeleton code • Section B programming task <p>Paper 2 Content</p> <p>1: Relational databases 2: SQL 3: Big data 4: Client server CRUD REST JSON XML Etc</p>	<p>relating to skeleton code</p> <ul style="list-style-type: none"> • Section B programming task • Section D programming task • Section C theory questions relating to skeleton code • Section B programming task <p>Paper 2 Content</p> <p>1: Functional programming</p>
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