

Year 10 and 11 Computing

	Focus	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	Topic	Unit 01 – Systems Architecture Unit 07 – Programming	Unit 02 – Data Representation Unit 07 – Programming	Unit 02 – Data Representation	Unit 03 – Networks	Unit 04.1 – Network Security Unit 07 – Programming	Unit 04.2 Systems Software Unit 07 – Programming
	Key concepts/ideas	<ul style="list-style-type: none"> - Basics of programming. - Students look at the CPU, its components as well as factors that determine their performance. 	<ul style="list-style-type: none"> - Continue to look basic programming constructs. - Students will begin looking at how to convert binary numbers. 	<ul style="list-style-type: none"> - Students develop their understanding of binary to include hexadecimal, binary addition and binary shifts. 	<ul style="list-style-type: none"> - Students will take a comprehensive look at network hardware, factors that determine the performance of a network as well as the importance of protocols. 	<ul style="list-style-type: none"> - Students will look at the types of attacks that affect networks and ways to stop them. - Students develop their programming knowledge to include arrays. 	<ul style="list-style-type: none"> - Students will look at what how an operating system works and features of an operating system. - Students will learn to use functions in Python.
	Key skills	Hardware Architecture. Problem Solving.	Mathematical problem solving The use of variables, constants and Boolean algebra.	The use of switches and translating between denary, binary and hexadecimal.	Network Protocols inc. HTTP and HTTPS.	How to protect computer systems and stay safe online. Data Structures i.e. Arrays	Decomposition – breaking down larger problems into smaller functions.
	Key terms/vocab	Central Processing Unit, Arithmetic Logic Unit, Registers, Cache, Variables, Constants, Sequencing, Selection, Iteration.	Binary, Denary, Hexadecimal, DIV MOD, FOR loop, WHILE loop, operators, logic, data types, strings, integers.	Left shift, right shift, ASCII, Unicode, metadata, compression.	Local Area Network, Wide Area Network, peer-to-peer network, client-server network, DNS, Hosting, topologies.	Malware, Social Engineering, Brute-Force Attack, DDOS, SQL Injection, Penetration Testing, Encryption, Data Structures, Arrays.	Operating Systems, Utility Software, Peripherals, File Handling, Function, Procedure.
	Independent learning / wider reading	Book of Programming Challenges (Teams)	Book of Programming Challenges (Teams)			Cyber Start Challenges Book of Programming Challenges (Teams)	Book of Programming Challenges (Teams)
	Assessment	In class Test	In class Test	In class Test Mocks	In class Test	In class Test	In class Test EOY Mocks
	Careers links	Hardware Architect, A.I, Engineering, Software Development	Software Development	Software Development	Network Administration, Ethical Hacking, Software Development	Network Administration, Ethical Hacking, Software Development	System Administration, Software Development
	Focus	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 11	Topic	Unit 06 – Algorithms	Unit 05 – Impacts of Tech Unit 06 – Algorithms	Unit 05 – Impacts of Tech Unit 07 – Programming	Unit 08 – Logic and Languages Unit 07 – Programming	Recap & Revision	
	Key concepts/ideas	<ul style="list-style-type: none"> - Differences between flow diagrams and pseudocode. - Searching and sorting algorithms. - 	<ul style="list-style-type: none"> - Ethics and Legislation around computing. - Random Number Generation. - Abstraction 	<ul style="list-style-type: none"> - Ethics and Legislation - Applying programming skills to set tasks. 	<ul style="list-style-type: none"> - How translators convert high languages to machine code. - Applying programming skills to set tasks. 	See previous sections.	
	Key skills	Problem Solving Software Design	How to apply abstraction to set problems. How to apply decomposition to solve problems	How to produce balanced arguments to ethical debates. How to produce maintainable programs.	Understanding the differences between high and low level languages. How to produce maintainable programs.	See previous sections.	
	Key terms/vocab	Algorithm, Pseudocode, Binary Search, Linear Search, Bubble Sort, Merge Sort, Insertion Sort,	Data Protection, Computer Misuse, Copyright, Patents, Abstraction, Decomposition.	Maintainability, Authentication, Validation, Comments, Indentation, Variable, Function,	NOT, AND, OR, Gates, IDE, Translators, Compiler, Interpreter, Assembler.	See previous sections.	
	Independent learning / wider reading			Book of Programming Challenges (Teams)	Book of Programming Challenges (Teams)	Revision Guides	
	Assessment	In class Test	In class Test Mocks	In class Test	In class Test Mocks	In class Test	
	Careers links	Software Development Project Management	Software Engineering	Careers involving legislation Software Engineering	Software Development Software Engineering	See previous sections.	

