



Overview:

The Year 10 curriculum has been devised to build on the programming skills and computing concepts which have been developed in Years 7, 8 and 9. The block and basic text programming is extended into Python text based programming. Computer Science is engaging and practical, encouraging creativity and problem solving. It encourages students to develop their understanding and application of the core concepts in Computer Science. Students also analyse problems in computational terms and devise creative solutions by designing, writing, testing and evaluating programmes.

Careers in the Curriculum:

The topics covered will highlight links to careers in Computer Programming and Network Security.

Term	Topic	Assessment
Aut1	<ul style="list-style-type: none"> • Data Representation • Binary and Hex number systems • Binary addition • Images and sound storage • Data compression • Python Programming • Variables • Logic statements • Selection 	End of topic tests
Aut2	<ul style="list-style-type: none"> • Logic and Languages • Logic diagrams and truth tables • Algorithms • Computational thinking • Searching algorithms • Sorting algorithms • Python Programming • Repetition • Random 	End of topic tests
Spr1	<ul style="list-style-type: none"> • Python Programming • Algorithms • Flowcharts and pseudocode • Correct and complete algorithms • Computer Systems • Architecture of the CPU • CPU performance • Embedded systems • Primary and secondary storage • RAM 	End of topic tests
Spr2	<ul style="list-style-type: none"> • Network Security • Networking threats • Identifying and preventing vulnerabilities • Programming Fundamentals • System Software • Operating systems • Utility software 	End of topic tests
Sum1	<ul style="list-style-type: none"> • PPE Revision • Data representation • Logic and languages • Algorithms • Computer architecture 	PPE
Sum2	<ul style="list-style-type: none"> • Logic and Languages • Defensive design • Errors and testing • Translators and facilities • IDEs Python Programming • Preparation for programming challenges • Python Programming • Preparation for programming challenges 	Python challenges



Overview:

The Year 11 curriculum has been devised to be engaging and practical, encouraging creativity and problem solving. It encourages students to develop their understanding and application of the core concepts in Computer Science. Students also analyse problems in computational terms and devise creative solutions by designing, writing, testing and evaluating programmes.

Careers in the Curriculum:

The topics covered will highlight links to careers in IT Support Technician Network Manager, Tester and Data Compliance.

Term	Topic	Assessment
Aut1	<ul style="list-style-type: none"> • Ethics • Ethical and cultural Issues • Computers in the modern world • Legislation and privacy • Ethical and cultural Issues • Computers in the modern world • Legislation and privacy 	End of topic tests
Aut2	<ul style="list-style-type: none"> • Networking • The Internet • Local area networks • Wireless networking • Client-server and P2P networks • Protocols and layers 	End of topic tests
Spr1	<ul style="list-style-type: none"> • Revisit previous topics • Computer Systems • Architecture of the CPU • CPU performance • Embedded systems • Primary and secondary storage - RAM 	Revision - practice papers
Spr2	Revision - All theory units	Revision - practice papers
Sum1	Revision - All theory units	Exam

Overview:

The Year 12 curriculum aims to cover at least the material required for the AS Level Computer Science qualification. Programming is at the core of the curriculum to allow the students to develop a good depth of knowledge in an additional language to that which they have learned at GCSE. Additional, non-required, web languages are also taught to broaden the programming experience of the students. The fundamental topics for understanding core principles of Computer Science are delivered in the Autumn term to allow for a greater understanding and appreciation in the later units of work.

Careers in the Curriculum:

The topics covered will highlight links to careers in Software Designer, Systems Analyst, Network Engineer, Web Designer.

Term	Topic	Assessment
Aut1	<ul style="list-style-type: none"> • Unit 1 Programming • VB.net sequence and selection • Unit 2 Problem Solving • Flow charts and Pseudocode • Testing • Finite state machines • Unit 3 Data Rep • Binary arithmetic • Images and sounds representation • Data compression and floating point binary 	Unit 2 written assessment Unit 3 written assessment
Aut2	<ul style="list-style-type: none"> • Unit 1 Programming • VB.net iteration/ arrays/subroutines • Unit 4 Computer Hardware • Operating systems • Logic gates • Boolean algebra • Unit 5 Computer Architecture • CPU architecture • Instruction sets • Input/output devices • Secondary storage devices 	Unit 4 written assessment Unit 5 written assessment
Spr1	<ul style="list-style-type: none"> • Unit 1 Programming • Data structures/ algorithms/ exception handling • Unit 6 Communications • Network topologies • Client Server and P2P networks and wireless networking • Communication and privacy • Social, legal and cultural Issues 	Unit 6 written assessment
Spr2	<ul style="list-style-type: none"> • Unit 1 Programming • HTML/CSS and PHP web languages • PPE Skeleton code preparation 	Programming practical assessment
Sum1	<ul style="list-style-type: none"> • Unit 9 Regular Languages • Mealy machines • Set notation • Regular expressions • Turing machine • Backus-Naur Form • Reverse polish notation 	Unit 9 written assessment PPE programming and written assessment
Sum2	<ul style="list-style-type: none"> • Unit 1 Programming • Object orientation • Independent project proposal • Unit 11 Databases and Software Development • ER modelling • Normalisation • SQL • Software Development Cycle 	Unit 11 written assessment

Overview:

The Year 13 curriculum begins by focussing on the key skills required to succeed in the programming project which is worth 20% of the course. The programming project consumes a significant amount of time and is dedicated half of the lesson time until its completion by the Easter break. The final term is dedicated to revision of all the units covered, with a particular focus on exam practice and to preparing and practising the pre-release material for the practical programming exam.

Careers in the Curriculum:

The topics covered will highlight links to careers such as Software Designer, Systems Analyst, Network Engineer, Web Designer.

Term	Topic	Assessment
Aut1	<ul style="list-style-type: none"> • Programming Project • Analysis • Unit 7 • Data Structures • Queues • Lists • Stacks • Hash tables • Graphs • Trees • Vectors 	Unit 7 written assessment
Aut2	<ul style="list-style-type: none"> • Programming Project • Design and development • Unit 12 • OOP and Functional Programming • Basic concepts of Object Orientated Programming • OOP design principles • Functional programming • Big data 	Unit 12 Written assessment
Spr1	<ul style="list-style-type: none"> • Programming Project • Development • Unit 8 • Algorithms • Recursion • Big-O notation • Searching and sorting • Graph traversal • Optimising algorithms • Limits of computation 	Unit 8 written assessment
Spr2	<ul style="list-style-type: none"> • Programming Project • Testing • Evaluation • Unit 10 • The Internet • Structure of the Internet • Packet switching and routers • Security • TCP IP protocols • IP and subnet 	Unit 10 written assessment
Sum1	Study of the Preliminary Programming Release	Paper 1 practical examination
Sum2	Revision and exam preparation	Paper 2 Theory examination