

COMPUTER SCIENCE CURRICULUM MAP – Possible Careers Education Links in PURPLE			
A. FORMAL KEY STAGE FIVE COMPUTER SCIENCE ADVANCED LEVEL CURRICULUM			
Core Threads	By the end of key stage FIVE we want all students of COMPUTER SCIENCE to know and do the following things: The binary number system; Understanding computational thinking, problem solving, including abstraction, decomposition, logic, and algorithms; Designing, writing, debugging programs, data structures; The components of networks, computer systems and how they communicate; The impacts of digital technology on individuals and wider society.		
Prior Knowledge	In KS5, students of COMPUTER SCIENCE will build on the following prior learning : KS4 algorithms & computational thinking, KS4 practical programming, KS4 binary topics, algorithms, and modelling, KS4 technology investigation topics, KS4 Computer systems, architecture, and networking		
Future Knowledge	The Curriculum in KS5 COMPUTER SCIENCE will prepare students for the following future learning : to move forwards with confidence into their chosen path be it education, training or employment knowing that they have the knowledge and understanding of computer science at a high level.		
Year 12	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT (* Yr12 2023)	Common Assessment End Points
	T1	Practical programming - Programming concepts, Data type & variable, sequencing, string handling, user input, selection, programming problems; Computer Architecture - CPU, Fetch-Decode, Instruction Set, Assembly language	Mini-programming problems, Computer architecture test
	T2	Practical programming - Simple data structures, loops, subroutines, files, programming problems. Computer Systems - Operating systems, programming languages, translators, Boolean logic, hardware, and software	Mini-programming problems, Computer systems test
	T3	Data representation - Number bases, systems, representation, compression, encryption.	Data representation test. NEA topic discussion
	T4	Practical programming - Yr12 skeleton code analysis, code theory & q's. Data representation - compression, encryption.	Data representation test. NEA research
	T5	Impact of digital technology; Recap and revision; Yr12 examination review	Databases and SQL test NEA Analysis
	T6	Practical programming - Object Oriented Programming, recursion, Mini-project. Databases and SQL. Introduction to databases, using SQL, practical and theory. NEA Project - Software engineering, NEA introduction and investigation, web development introduction, games development introduction	Year 12 mock examinations Milestone: NEA Analysis
Year 13	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT (*Yr13 2024)	Common Assessment End Points
	T1	Data Structures – describe and apply abstract data structures, practical programming examples. NEA and Practical programming - Mini-code problems, introduce Yr13 skeleton code, NEA investigation and analysis. Computer communications and networks – Theory of Communication, Networking, Internet, TCP/IP. Network security	NEA Design Communications & Networks test Milestone: NEA Design
	T2	Theory of computation - Problem solving and algorithms, application, identifying the algorithm complexity. Algorithms – describe and apply Graph, Tree, RPN, searching, sorting, optimisation algorithms. NEA - Analysis, Design and devt	Data structures test. Theory of computation test. NEA coding
	T3	Algorithms – describe and apply Graph, Tree, RPN, searching, sorting, optimisation algorithms. Non-examined Assessment (NEA) - Design and development	Algorithms test Milestone: NEA coding Milestone: NEA project hand-in
	T4	Yr13 skeleton code analysis, code theory and questions. Theory of computation - Regular and Context-free languages, complexity and Big-O, Model of computation. Functional Programming – introduction, theory and practical programming. NEA - Development and testing	Theory of computation test Functional programming and Big Data test
	T5	Big Data – how big data is structured and used. Programming – mini-coding problems, exam style questions NEA - Development, testing and evaluation. Recap and revision	Big Data test NEA Final assessment hand in
B. WIDER KEY STAGE FIVE COMPUTER SCIENCE CURRICULUM			
- BEBRAS Computational Thinking			

COMPUTER SCIENCE CURRICULUM MAP			
A. FORMAL KEY STAGE FOUR COMPUTER SCIENCE GCSE LEVEL CURRICULUM			
Core Threads		By the end of key stage FOUR we want all students of Computer Science to know and do the following key things: application for data storage; Understanding of computational thinking, problem solving, including abstraction, decomposition, logic and algorithms; Designing, writing and debugging of programs; The components of networks, computer systems and how they communicate; The impacts of digital technology on individuals and wider society;	
Prior Knowledge		In KS4, students of Computer Science will build on the following prior learning: KS3 algorithms & computational thinking, KS3 practical programming, KS3 binary topics, algorithms and modelling, KS3 technology investigation topics, KS3 Cybercrime	
Future Knowledge		The Curriculum in KS4 Computer Science will prepare students for the following future learning : Computer systems, Practical programming, Programming, Algorithms and modelling, Computational Thinking, Cyber Security, Impacts of digital technology, A Level Computer Science.	
Year 10	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT (Yr10 2023 start)	Common Assessment End Points
	T1	Practical Programming- data type and variable, sequencing, string handling, user input, selection Computer Systems- systems architecture – CPU, performance, embedded systems;	Computer systems - CPU
	T2	Practical Programming- data type and variable, sequencing, string handling, user input, selection Computer Systems- Memory and storage;	Computer systems – Memory and storage Programming
	T3	Algorithms- modelling techniques, computational thinking, searching & sorting Computer Systems- Data representation (Binary);	Computer systems – Data representation
	T4	Practical Programming – subroutines, coding problems Computer Networks- types, Topology, wired and wireless, protocols	Computer Networks
	T5	Revision of topics covered Yr10 examination review and feedback	Year 10 examinations
	T6	Practical programming- Sub-routines, Mini-project, robust programming	
Year 11	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT (Yr11 2023 start)	Common Assessment End Points
	T1	Practical Programming- recap via min-code problems, arrays, subroutines; Computer Systems- systems architecture – secondary storage; Ethical, legal, cultural and environmental impacts of digital technology	Computer systems
	T2	Computer Networks- types, Topology, wired and wireless, protocols, Threats, security, and prevention. Revision of topics covered. Yr11 examination review and feedback	Computer Networks Year 11 mocks
	T3	Databases and SQL. Boolean Logic and logic gates	Databases and SQL Boolean logic
	T4	Programming and IDE, programming languages. Practical programming	Programming
	T5	Recap and revision of programming, data structures, data representation, computer systems, databases, networks, security and impacts on society.	Year 11 GCSE Paper 1 and 2
B. WIDER KEY STAGE FOUR COMPUTER SCIENCE CURRICULUM			
- BEBRAS computational thinking			

COMPUTER SCIENCE CURRICULUM MAP			
A. FORMAL KEY THREE COMPUTER SCIENCE CURRICULUM			
Core Threads		By the end of key stage THREE we want all students of Computer Science to know and do the following key things: E-safety, digital footprint and strategies for staying safe online; The binary number system; Understanding of computational thinking, use of problem solving, including abstraction, decomposition, logic and algorithms; Evaluating, adapting and writing and debugging of programs; The components of networks and how they communicate; The impacts of digital technology on individuals and wider society; Digital literacy skills and use of a range of software;	
Prior Knowledge		In KS3, students of Computer Science will build on the following prior learning : Primary ICT & Computer Science; E-Safety; Mathematics	
Future Knowledge		The Curriculum in KS3 Computer Science will prepare students for the following future learning : Key stage 4 E-safety; GCSE programming, Computer systems, Data representation; KS4 computational thinking; Impacts of digital technology	
Year 7	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Introduction to network: logging on, password security, AUP & class rules, organising, naming & saving work, using email, searching the web, using library system, computer networks theory; Ai introduction : What is Ai, How computers learn, Ai Bias	End of Term Knowledge Check
	T2	E-Safety: the dangers, staying safe, rules, stranger danger, getting help, ICT skills-presenting information; Computational Thinking: BEBRAS Computational Thinking Challenge; DT Tinkercad: 3D design tools; Graphics and animation-Xmas card	End of Term Knowledge Check
	T3	Computer History: computer history, binary number system, binary conversion, uses of binary; DT Tinkercad: Code blocks;	End of Term Knowledge Check
	T4	Programming with Scratch- blocks, sequencing, selection, variables; Spreadsheets and modelling- uses, cell referencing, calculations, using functions	End of Term Knowledge Check
	T5	Programming with Python Turtle: sequencing, selection, variables; Recap and revision	End of Term Knowledge Check
	T6	DT Tinkercad: Robotics; Careers	KS3 Examinations
Year 8	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Ai introduction: What is Ai, How computers learn, Ai Bias; Web design - HTML and CSS	End of Term Knowledge Check
	T2	Computational Thinking-BEBRAS Computational Thinking Challenge; E-Safety- digital citizenship; ICT and Crime –The law, Email scams, Online purchasing, Encryption	End of Term Knowledge Check
	T3	Computer Systems and Logic Gates;	End of Term Knowledge Check
	T4	Programming with the BBC Microbit- problem solving, sequencing, selection, variables & lists, Iteration	End of Term Knowledge Check
	T5	Digital Literacy: Typing skills ; Vector Graphics – Using shapes and basic tools, manipulating layers	End of Term Knowledge Check
	T6	Recap and revision; Careers; Digital Literacy: recap of how to organise and manage files	KS3 examinations
Year 9	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Text based programming using Python and investigating algorithms	End of Term Knowledge Check
	T2	Computational Thinking- BEBRAS Computational Thinking Challenge; Binary and Logic gates recap;	End of Term Knowledge Check
	T3	E-safety- sexting scenario, reporting process, fake news; Spreadsheets: recap of formula, functions and charts	End of Term Knowledge Check
	T4	Deep and Dark web: internet history, types of web, big data	End of Term Knowledge Check
	T5	Digital Literacy: Typing skills, podcast – sound recording and editing	End of Term Knowledge Check
	T6	GCSE Transition and IT skills for KS4	KS3 examinations
B. WIDER KEY STAGE THREE COMPUTER SCIENCE CURRICULUM			
- BEBRAS computational thinking - KS3 Code Club - CyberFirst Girls			