The King's (The Cathedral) School
Peterborough

A Family Achieving Excellence

Computing Curriculum Overview 2023-24

JD	ESafety	Algorithms 1	Algorithms 2 - Programming	How the internet works	How the Internet Knows who you are.	Hardware

KS3

Year 7	Internet Safety	History of Computers	Input/Output Devices	Binary	Inside a computer	Microbits	Scratch	Python Programming	Robotics	Wearable technology
Year 8	HTML	Algorithms - flowcharts	Block programming	Boolean Logic	Python Programming					
Year 9	Python	Encryption	Compression	Algorithms	Computer Networks	Binary	Python	IDEA		

Key Stage 3 National Curriculum

- _design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- _understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- _use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- _understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
- _understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- _understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
- _undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- _create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
- _understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

KS4

1.1 Systems Architecture		2.1 Algorithms	
	1.1.1 Architecture of the CPU		2.1.1 Computational thinking
	1.1.2 CPU Performance		2.1.2 Designing, creating and refining algorithms
	1.1.3 Embedded systems		2.1.3 Searching and sorting algorithms
1.2 Memory and storage		2.2 Programming fundamentals	
	1.2.1 Primary storage (Memory)		2.2.1 Programming fundamentals
	1.2.2 Secondary storage		2.2.2 Data types
	1.2.3 Units		2.2.3 Additional programming techniques
	1.2.4 Data storage		
	1.2.5 Compression		
1.3 Computers networks, connections and protocols		2.3 Producing robust programs	
	1.3.1 Networks and topologies		2.3.1 Defensive design
	1.3.2 Wired and wireless networks, protocols and layers		2.3.2 Testing
1.4 Network security		2.4 Boolean logic	
	1.4.1 Threats to computer systems and networks		2.4.1 Boolean logic
	1.4.2 Identifying and preventing vulnerabilities		
1.5 Systems software		2.5 Programming languages and Integrated Development Environments	
	1.5.1 Operating systems		2.5.1 Languages
	1.5.2 Utility software		2.5.2 The Integrated Development Environment (IDE)
1.6 Ethical, legal, cultural and environmental impacts of digital technology			
	1.6.1 Ethical, legal, cultural and environmental impact		