



KS3

Computer Science Key Stage 3 Curriculum Overview

Autumn Term

Spring Term

Summer Term

Year 7

Using Computers Safely Effectively Responsibly

- Teams, Office 365, Doodle
- File management
- Social networking
- Keeping your data safe
- Using email
- Searching the web

Data Representation

- Binary
- Denary

Data Representation

- Adding two binary numbers
- Binary to Hexadecimal

Artificial and Machine learning

- What is AI
- Machine Learning
- Ethics an AI
- Image recognition
- Turing test

Programming

Use Microbits to write programs on:

- Flashing heart
- Name tag
- Smiley buttons
- Dice
- Love meter
- Rock paper scissors, Coin flipper

Edison robots to create code on navigating a maze and racetrack

Year 8

Computer Crime and Cyber Security

- Email scams
- Hacking
- Protecting personal data
- Copyright
- Health and safety

Understanding Computers and Data Representation

- Elements of a computer
- CPU
- Understand binary and denary
- Binary addition using three numbers
- Denary to Hexadecimal
- Logic gates AND, OR, NOT
- Storage devices

Networks

- The internet
- Connectivity
- Topologies
- Client-server networks
- Encryption

Year 9

Computational Thinking

- Logic thinking and logic gates
- Algorithmic thinking 1 and 2
- Abstraction
- Decomposition

Data Representation

- Binary to Denary and vice versa
- Adding three binary numbers
- Denary to Hexadecimal

Python Programming

- Sequence, print and output
- Selection, if, elif, else, comparison operators
- Iteration for count based
- Iteration while condition based

Photoshop – Image manipulation on Photoshop

- Red eye removal
- Blemish spot removal
- White teeth
- Change eye colour

Photoshop – Image manipulation on Photoshop

- Change eye colour, Remove person
- Create CD cover

Spreadsheets – Road Trip on Excel

- Computer models, Financial models
- What if scenarios
- Condition formatting
- Validation
- Macros and charts

**KS4**

Computer Science Key Stage 4 Curriculum Overview

Autumn Term**Spring Term****Summer Term****Year 10****System Architecture**

- The CPU
- Functions and characteristics of the CPU
- Memory
- Storage
- End of unit Assessment

Programming

- Programming fundamentals
- Sequence
- Selection
- Iteration for

Data Representation

- Units and binary numbers
- Binary arithmetic and hexadecimal
- Characters
- Images
- Sound
- Compression
- End of unit assessment

Programming

- Iteration while
- Procedures and functions
- Regular expressions

Networks

- The internet and wide area networks
- Local area networks
- Wireless networking
- Client server and P2P networks

Algorithms

- Algorithms and flowcharts
- Searching algorithms
- Sorting algorithms

Year 11**Networks**

- Standards Protocols and layers
- End of unit assessment

Network security and system software

- Network threats
- Preventing vulnerabilities

Algorithms

- Computational thinking
- Algorithms and pseudocode
- Correct algorithms
- End of unit assessment

Network security and system software

- Operating system
- Utility software
- End of unit assessment

Programming

- Arrays
- SQL
- Records and files
- End of unit assessment

Impact of digital society

- Ethics and cultural issues
- Environmental issues
- Legislation and privacy
- End of unit assessment

Logic and Languages

- Logic diagrams
- Defensive design
- Errors and testing
- Translators and facilities
- IDE
- End of unit assessment



KS5

Computer Science Key Stage 5 Curriculum Overview

	Autumn Term	Spring Term	Summer Term
Year 12	Components of a computer <ul style="list-style-type: none"> - Processor components - Processor performance - Types of processors - Input devices - Output devices - Storage devices - End of unit assessment Programming Techniques <ul style="list-style-type: none"> - Programming fundamentals - Selection - Iteration - Subroutines 	System Software <ul style="list-style-type: none"> - OS functions - Types of OS - Nature of applications - Programming languages - End of unit assessment Software Development <ul style="list-style-type: none"> - System analysis methods - Writing and following algorithms - Programming language - End of unit assessment Programming Techniques <ul style="list-style-type: none"> - Recursion - Object orientated programming - End of unit assessment 	Networks <ul style="list-style-type: none"> - Structure of the internet - Internet communication - Network security and threats - HTML and CSS - JavaScript - Search engine indexing - Client server and peer-to-peer - End of unit assessment Data Structures <ul style="list-style-type: none"> - Queues - Lists and linked lists - Graphs - Trees - Stacks
Year 13	Data Types <ul style="list-style-type: none"> - Data types binary and hexadecimal - ASCII and Unicode - Binary arithmetic - Floating point arithmetic - Bitwise manipulation and masks - End of unit assessment Data Structures <ul style="list-style-type: none"> - Arrays, tuples and records - Hash tables - End of unit assessment 	Boolean Algebra <ul style="list-style-type: none"> - Logic gates - Boolean expressions - Karnaugh maps - Adders and D-Type flip-flops - End of unit Assessment Algorithms <ul style="list-style-type: none"> - Merge sort - Quick sort - Graph traversal algorithms - Optimisation algorithms 	Legal and cultural issues <ul style="list-style-type: none"> - Computing related legislation - Ethical, moral and cultural issues - Privacy and censorship - End of unit Assessment Computational Thinking <ul style="list-style-type: none"> - Abstraction - Thinking ahead - Thinking procedurally - Think logically and concurrently - Problem recognition

	Algorithms <ul style="list-style-type: none">- Analysis and design of algorithms- Searching algorithms- Bubble sort- Insertion sort	<ul style="list-style-type: none">- End of unit assessment	<ul style="list-style-type: none">- Problem solving- End of unit assessment
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