GCSE Computer Science

Curriculum Intention - Computing sits at the cornerstone of the modern world, affecting the way we communicate and work as it encompasses Digital Literacy, IT and Computer Science. With this in mind our curriculum offers a pathway for our students to explore the use of applications and the creation of software to solve complex real-world problems through the use of algorithmic thinking, which consists of abstraction, decomposition and pattern recognition.
Notes: Figures in brackets indicate approximate number of lessons in each half term.

2 Year Course

<table>
<tr><th colspan="6">Year 1</th></tr>
<tr><td colspan="2">Autumn</td><td colspan="2">Spring</td><td colspan="2">Summer</td></tr>
<tr><td>Autumn 1 (20)</td><td>Autumn 2 (16)</td><td>Spring 1 (16)</td><td>Spring 2 (12)</td><td>Summer 1 (15)</td><td>Summer 2 (16)</td></tr>
<tr><td>Key themes:</td><td>Key themes:</td><td>Key themes:</td><td>Key themes:</td><td>Key themes</td><td>Key themes:</td></tr>
<tr>
<td>Introduction to course Specification 1.1
- Von Neumann Architecture
- Characteristics of CPU
- Embedded systems

Systems memory 1.2
- RAM & ROM
- Virtual Memory
- Flash memory

Programming 2.2
- Introduction to programming
- - Flow diagrams & Pseudocode</td>
<td>Storage 1.3
- Types & applications
- Capacity
Networks 1.4
- Types of networks
- Factors affecting network performance
- Client-server & peer to peer
- Lan hardware
- virtual Networks

Programming 2.2
- Data structures
- Basic maths
- Variables & Constants</td>
<td>Network Topologies and Protocols 1.5
- star & mesh
- WiFi & Frequencies
- WiFi & Encryption
- Packet switching

Programming 2.2
- Programming challenges</td>
<td>Systems Security 1.6
- Forms of attack
- Threats posed to networks
- Identifying and Preventing vulnerabilities

Systems software 1.7
- Operating systems
- Utility software

Programming 2.2
- Programming challenges
- Functions & Procedures</td>
<td>Ethical, Legal, Cultural and Environmental concerns
- Ethical issues
- Privacy issues
- Legal issues
- Cultural issues
- Environmental issues
- Stakeholders
- Open source V Proprietary software

Programming 2.2
- Programming challenges
- Arrays</td>
<td>Algorithms 2.1
- Abstraction
- Decomposition
- Algorithmic thinking
- Linear search
- Binary search
- Bubble sort
- Merge sort
- Insertion sort

Programming 2.2
- Programming challenges
- SQLlite</td>
</tr>
<tr><td colspan="6">Assessment</td></tr>
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<td>Basic Programming constructs 2.2
- Data types & Operators
- File handling
- Arrays
- Sub programs
- Records & SQL

Producing robust programs 2.3
- Input validation
- authentication
- Maintainability
- Testing
- Test data

Computational Logic 2.4
- Logic Diagrams
- Operators and Truth Tables</td>
<td>Translators and Facilities of languages 2.5
- Low level programming
- Assemblers, Compilers and interpreters for translation
- IDE’s

Launch practice Programming project (8 hrs).
- Review and further improvement to develop a resource to support Programming project.

Launch Official programming project (4 hrs). No support provided</td>
<td>Continue Official Programming project (16 hrs).
No support provided</td>
<td>Data Representation 2.6
- Binary Units
- Binary addition
- Hexadecimal
- Check digits
- Character sets
- Images
- Sound
- Compression</td>
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- Programming challenges</td>
<td>Algorithms 2.1
- Abstraction
- Decomposition
- Algorithmic thinking
- Linear search
- Binary search
- Bubble sort
- Merge sort
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Programming 2.2
- Programming challenges
- SQLLite</td>
<td>Basic Programming constructs 2.2
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Programming 2.2
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- IDE's

Launch practice Programming project.</td>
<td>Practice Programming Project
- Review and further improvement to develop a resource to support Programming project.

- Students to respond to feedback and ensure they have a complete guide to a project.</td>
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<tr><td>Programming 2.2
- Refresher

Launch Official programming project. (4 hrs)
No support provided</td><td>Continue Official programming project. (16 hrs)
No support provided</td><td>Data Representation 2.6
- Binary Units
- Binary addition
- Hexadecimal
- Check digits
- Character sets
- Images
- Sound
- Compression</td><td>Revision</td><td></td><td></td></tr>
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