



The Fisher Way: Curriculum



The Fisher Way aims to educate and inspire with joy, faith and love because we are an inclusive Catholic community.

Successful and resilient learners who aspire to and achieve excellence

Confident individuals who can explore and communicate effectively

Responsible citizens who are active, loving and wise in all their endeavours

| Subject | Computer Science |
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| Year Group | Year 9 |
| Intent | <p>Successful and Resilient Learners: who can analyse problems and find efficient, creative solutions for both real world situations and artificial systems</p> <p>Confident Individuals: who can use digital technology effectively, creatively and safely in their personal lives and future careers</p> <p>Responsible Citizens: who understand the social and cultural impact that technology has on their lives and the lives of others.</p> |

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| Narrative | <p>At KS4 Computer Science is broken in 2 elements, Computational Thinking and Computer Systems</p> <p>In Year 9 the Computational Thinking elements focuses on the basic structures of programming and algorithms, and all learners will develop a knowledge of data types and flow control in algorithms, and how to apply the principles of abstraction and decomposition.</p> <p>The focus for Computer Systems looks at data representation, and all learners will develop a knowledge of how binary is used to store data and files that can be understood by a computer, and how to calculate the storage requirements for a computer.</p> <p>The Computational Thinking topics will build on the work done in KS3 when looking at Micro:bit, Computational Thinking and Python.</p> <p>The Computer Systems topics will build on the work done in KS3 into data representation, binary and storing bits.</p> <p>The work on data types is key knowledge in order to understand how multiple values can be store by a single identifier; and the work on flow control is key knowledge in order to understanding the structured approach to programming</p> <p>The work on how individual data is represented is key knowledge in order to understand how that data is then moved around a single computer system.</p> | | | | | |
| Half term | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Knowledge (topics studied) | Introduction to Python - Variables, Data Types, Selection, Loops | Data Representation Sections 1 and 2 - Number Bases, Binary Arithmetic | Algorithm Design - Pseudocode, Decomposition, Planning a Program | Data Representation Sections 3 and 4 - Text, Images, Sound, Compression and File Sizes | Developing Programs in Python - Random Numbers, Abstraction and Generalisation | Cyber Security - Malware, Types of Threats, Prevention of Threats |
| Key skills | Logical Reasoning, Computational Thinking and Problem Solving. Ability to identify simple errors in code and find solutions to small problems. | Numeracy around number bases and binary arithmetic. Understanding of Base 10 principles. | Logical Reasoning, Computational Thinking and Problem Solving. Considering larger programs that require multiple skills. | Numeracy skills to convert and calculate file sizes. | Logical Reasoning, Computational Thinking and Problem Solving. Decomposing larger problems into manageable modules that can be solved with programs. | Literacy comprehension, applying knowledge in a range of different situations. |

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| Cultural capital | Understanding the fundamental principles that underpin how automation works and how humans interact with machines. | The Diving Bell and the Butterfly - simplest forms of communication. | Limitations of computer systems and how we need to consider and bypass these. | Hidden complexity, understanding the limitations of humans and our senses. Understanding human sign and hearing, and the principles of standardised communication methods. | Considering different user perspectives for a given scenario. | Implication of privacy in a digital world. Ethical hacking and how humans are responsible for the online world. Difficulty regulating online companies. |
| Assessment | Programming Workbook Questions 1 | Unit 3 Midpoint | Programming Workbook Questions 2 | End of Unit 3 | Programming Workbook Questions 3 | End of Unit 6 |