fortismere Computer Science Department – KS3 Curriculum Map 2020 - 21

Curriculum Intent

The Computer Science curriculum is ambitious and has been carefully designed to give **all** pupils the knowledge, skills and cultural capital they need to succeed in life. The CS curriculum is coherently planned and sequenced towards cumulatively sufficient knowledge and skills for future learning and employment. With ever changing technology and resources the curriculum is reviewed constantly; adapted, designed and developed to be ambitious and meet the needs of pupils. Thus, developing their knowledge, skills and abilities to apply what they know and can do with increasing fluency and independence. The curriculum is broad and we teach an extensive range of concepts at all stages.

At Fortismere, the high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programmes, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

The curriculum offered at Fortismere school for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- are responsible, competent, confident and creative users of information and communication technology.

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Yr7 (KS3)	Topic Area	Knowledge/skills to be taught.	Resources/support at home
Autumn 1	Baseline test Scratch - developing a game	Use a block based programming language to solve a variety of computational problems.	PG ONline Google classroom
Autumn 2	Scratch - developing a game E-safety	Use a block based programming language to solve a variety of computational problems. 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	PG ONline Google classroom
Spring 1	Understanding Computers Binary Data Representation (Text/ASCII - Images)	Understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers 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	PG ONline Google classroom
Spring 2	Kodu Game lab	Use a block based programming language to solve a variety of computational problems.	PG ONline Google classroom
Summer 1	Computational Thinking Spreadsheets	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems Collects, organises and presents data and information in digital content.	PG ONline Google classroom

Summer 2	Microbit	Use, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	PG ONline Google classroom
Yr8 (KS3)	**Topic Area**	**Knowledge/skills to be taught.**	**Resources/support at home**
Autumn 1	Flowcharts	Use logical reasoning to compare the utility of alternative algorithms for the same problem	PG ONline Google classroom
Autumn 2	Introduction to Python	Use a textual programming language to solve a variety of computational problems	PG ONline Google classroom
Spring 1	Search algorithms - Guess my number	Understand key algorithms such as binary and linear search algorithms that reflect computational thinking	PG ONline Google classroom
Spring 2	Databases	Use a declarative programming language (SQL) to solve a variety of computational problems Make appropriate use of data structures -tables	PG ONline Google classroom
Summer 1	IT Project - Theme Park	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	PG ONline Google classroom
Summer 2	IT Project - Theme Park	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	PG ONline Google classroom
Yr9 (KS3)	**Topic Area**	**Knowledge/skills to be taught.**	**Resources/support at home**
Autumn 1	Networks	Understand why computers are connected in a network Understand different types of networks (LAN, WAN) Understand how the internet is structured	PG ONline Google classroom

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Autumn 2	HTML & CSS		PG ONline Google classroom
Spring 1	Python Next Steps	Use a textual programming language to solve a variety of computational problems Make appropriate use of data structures -lists Design and develop modular programs that use procedures or functions	PG ONline Google classroom
Spring 2	Boolean Logic gates	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming	PG ONline Google classroom
Summer 1	Data Analysis, questionnaire and draw charts	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	PG ONline Google classroom
Summer 2	Video editing with Movie Plus	Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	PG ONline Google classroom