Subject Computer Science

Curriculum vision

Our Computer Science curriculum is structured in units and devises from the National Centre of Computing Education's (NCCE) computing taxonomy to ensure comprehensive coverage of the subject. All learning outcomes can be explained through a high-level taxonomy of ten components, as shown below:

- **Algorithms** – identifying, designing, creating and assessing algorithms.
- **Computer networks** – comprehending how networks can be applied to retrieve and share data, along with the accompanying risks.
- **Computer Systems** – Recognising what is a computer and how its parts function together.
- **Creating media** – selecting and creating a wide range of media such as text, sound and video.
- **Data and information** – learning how data is accumulated, structured and applied, to represent real life products and scenarios.
- **Design and development** – understanding activities involved in planning, creating and evaluating computing products.
- **Effective use of tools –** using software to support learning.
- **Impact of technology** – understanding how we and society as a whole use and interact with computer systems.

The Computing Curriculum is based around the following core principles:

- **Inclusive and ambitious** – each lesson has been structured to support all pupils and builds on learning from previous lessons. Scaffolded activities are provided to ensure all students can reach the same objective. There are also extension activities to allow students to deepen their knowledge of the subject and challenge themselves.
- **Research informed** – As computing is a much newer subject, the curriculum has been built upon a set of pedagogical principles, reinforced by the latest computing research. The computing curriculum.
- **Supporting knowledge** – pupils will be supported with obtaining knowledge, through key concepts, terms and vocabulary including regular recall and revision.
- **Working together** – working within a team with peers is encouraged, using concepts such as pair programming, structured group tasks and peer instruction. This will increase classroom discussion and stimulate understanding of the units.
- **Real world examples** – Using real world examples along with a focus of mutuality with other curriculum subjects will aid students in their learning and cement their knowledge.
- **Hands on approach** – Our lessons make use of physical computing via project-based activities in order to solidify their knowledge and understanding.
- **Reading and exploring code** – Students will be encouraged to focus on reviewing and interpreting blocks if code, which will in turn support their ability to write code.
- **Challenging misconceptions** – throughout lessons formative questioning will be used to pinpoint any misconceptions and address them as they occur.

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Curriculum Overview

Term 1	Autumn 1	Why this? Why now?	Autumn 2	Why this? Why now?
Year 7	Clear messaging in digital media	Building upon students experience in KS2. Students will use a range of different skills across several pieces of software, with the aim of creating a poster and slides on a given theme.	Clear messaging in digital media / Programming essentials in Scratch	The first programming unit of KS3, designed to build students confidence and understanding of the key programming constructs. In this unit the main constructs covered are sequencing, variables, selection and iteration.
Year 8	Media – Vector graphics	This unit will enable students to design graphics using vector graphic editing software (Inkscape). By the end of the unit students will have produced an illustration, a logo, or some icons using vector graphics. Vector graphics can be used to design anything from logos to icons to posters, board games and complex illustrations.	Media – Vector graphics / Developing for the web	Students will look at the technologies that make up the internet and the World Wide Web. Using HTML and CSS to create webpages, students will explore how websites are catalogued and organised for effective retrieval using search engines. By the end of this unit students will have an operational website.

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Term 2	Spring 1	Why this? Why now?	Spring 2	Why this? Why now?
Year 7	Programming essentials in Scratch part 1	The first programming unit of KS3, designed to build students confidence and understanding of the key programming constructs. In this unit the main constructs covered are sequencing, variables, selection and iteration.	Programming essentials in Scratch Part 2	Building on from what students previously learnt in Part I, students will strengthen their understanding of sequence, selection and iteration, and reinforce their problem-solving skills. Students will create their own subroutines, delve deeper into decomposition and create and use lists.
Year 8	Developing for the web	Students will look at the technologies that make up the internet and the World Wide Web. Using HTML and CSS to create webpages, students will explore how websites are catalogued and organised for effective retrieval using search engines. By the end of this unit students will have an operational website.	Introduction to Python Programming	Students will be introduced to text-based programming with Python. Starting with the basics and programs involving inputs and outputs, students will eventually move on to arithmetic operations, selection, iteration and randomness.

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Term 3	Summer 1	Why this? Why now?	Summer 2	Why this? Why now?
Year 7	Programming essentials in Scratch – Part II / Using media – Gaining support for a cause	This unit will help students to develop their understanding of IT and digital literacy, creating a blog post about a real-world cause, that they are passionate about.	Using media – Gaining support for a cause	This unit will help students to develop their understanding of IT and digital literacy, creating a blog post about a real-world cause, that they are passionate about.
Year 8	Introduction to Python programming / Mobile app development	In this unit students will go through the process of creating their own mobile app, building on programming concepts learnt in previous units. Students will work in pairs to conduct user research, design their app, write the code, evaluating and finally publishing the app.	Mobile app development	In this unit students will go through the process of creating their own mobile app, building on programming concepts learnt in previous units. Students will work in pairs to conduct user research, design their app, write the code, evaluating and finally publishing the app.