



Subject Computer Science

Curriculum vision

Our Computer Science curriculum is structured in units and derives 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 of 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.



Curriculum Overview

Term 1	Autumn 1	Why this? Why now?	Autumn 2	Why this? Why now?
Year 7	Impact of Technology	We're exploring technology this term to understand its impact, focusing on online safety, password security, and how technology affects us. Year 7 will learn crucial skills for staying safe online and becoming responsible digital citizens.	Using Media	Vector graphics can be used to design anything from logos and icons to posters, board games, and complex illustrations. Through this unit, students will be able to better understand the processes involved in creating such graphics and will be provided with the knowledge and tools to create their own.
Year 8	Data Representation	This unit conveys essential knowledge relating to binary representations. The activities will introduce students to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the students are familiar with.	Data Representation	This unit conveys essential knowledge relating to binary representations. The activities will introduce students to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the students are familiar with.
Year 9	Cyber Security	This unit takes students on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. Year 9 will start by considering the value their data holds and what organisations might use it for. They will then learn about social engineering and other common	Cyber Security	This unit takes students on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. Year 9 will start by considering the value their data holds and what organisations might use it for. They will then learn about social



	Part of United Learning	cybercrimes, and finally look at methods to protect against these attacks.		engineering and other common cybercrimes, and finally look at methods to protect against these attacks.
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Term 2	Spring 1	Why this? Why now?	Spring 2	Why this? Why now?
Year 7	Networking	Imagine a world without computer networks: there would be no more YouTube, Google, instant messaging, online video gaming, Netflix, and iTunes; no online shopping; no file sharing; and no central backups of information. This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols.	Programming in Scratch	This unit is the first programming unit of KS3. The aim of this unit and the following unit (Programming II) is to build learners' confidence and knowledge of the key programming constructs. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration.



Year 8	Computer Systems	The aim is to provide a concise overview of how computing systems operate, conveying the essentials and abstracting away the technical details. Students will explore the different layers of computing systems: from programs and the operating system to the physical components that store and execute these programs.	Python Programming	This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration.
Year 9	Animation	Films, television, computer games, advertising, and architecture have been revolutionised by computer-based 3D modelling and animation. In this unit students will discover how professionals create 3D animations using the industry-standard software package, Blender. By completing this unit learners will gain a greater understanding of how this important creative field is used to make the media products that we consume. Sessions will take learners through the basics of modelling, texturing, and animating; outputs will include 3D models and short videos.	Animation	Films, television, computer games, advertising, and architecture have been revolutionised by computer-based 3D modelling and animation. In this unit students will discover how professionals create 3D animations using the industry-standard software package, Blender. By completing this unit learners will gain a greater understanding of how this important creative field is used to make the media products that we consume. Sessions will take learners through the basics of modelling, texturing, and animating; outputs will include 3D models and short videos.



Term 3	Summer 1	Why this? Why now?	Summer 2	Why this? Why now?
Year 7	Programming in Scratch	This unit is the first programming unit of KS3. The aim of this unit and the following unit (Programming II) is to build learners' confidence and knowledge of the key programming constructs. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration.	Spreadsheet Basics	Students will be introduced to the wonderful world of spreadsheets and the concept of cell referencing. Learners will collect, analyse, and manipulate data, before turning it into graphs and charts.
Year 8	Python Programming	This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration.	Web Development	Students will explore the technologies that make up the internet and World Wide Web. Students will explore the building blocks of the World Wide Web, HTML, and CSS, with the aim of having a functioning website at the end of the unit.
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