

Curriculum plan: Computer Science

*"Ultimately you want to have the entire world's knowledge connected directly to your mind" Sergey Brin
- Google*

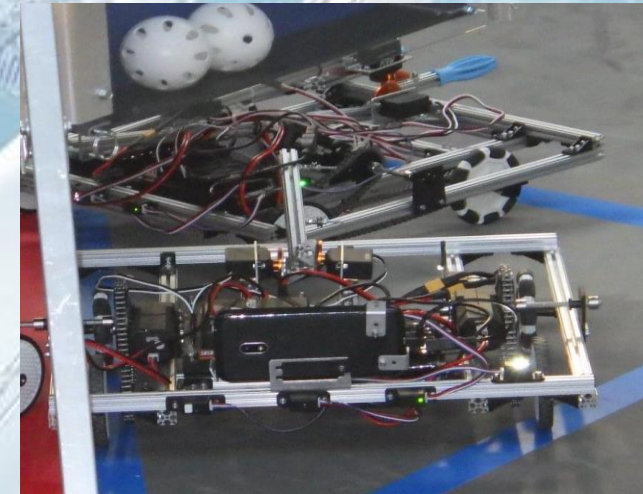
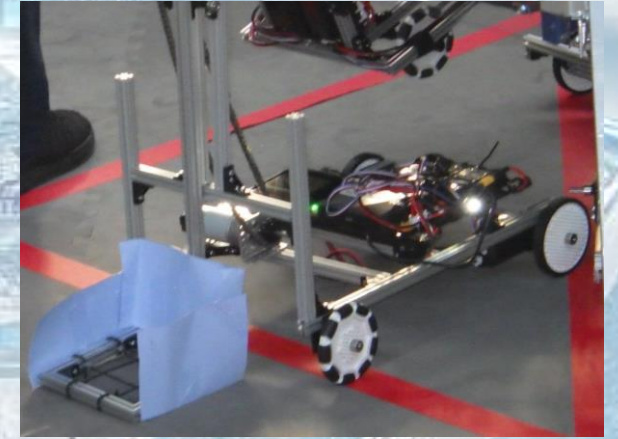
Our intent

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. The use and understanding of computers gives learners the opportunity to develop sector-specific knowledge and skills in a practical learning environment.








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 programs, systems and a range of content.

Enrichment in computer science

The Woodhouse Academy computer science experience is complimented by cross-curricular links with maths, science and design and technology. Our enrichment programme is designed to allow pupils the chance to experience computing in different contexts. We have run a robotics club with the D&T department, competing in the First Tech Challenge robot competitions, qualifying for the Nationals in 2020 and being medallists in our first season in 2019. We have also visited Barclays at Radbroke Hall and the BBC at Birmingham to see how computers are used in the real world.













y5 Curriculum plan: computer science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	Photography	Architects	DJs	Problem Solvers	Programmers	
	<p>Key Elements:</p> <ul style="list-style-type: none"> • Pixels • Digital Images • Image software • Image manipulation 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Google Sketchup • 3-D Model • Pre-made elements • Virtual Art gallery • Images 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Audacity • Voice recording • Combining tracks • Voice effects 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Flowcharts • Flowol • Mimic • Sequences • Decisions 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Scratch • Blocks • Sprite • Program • Maze 	
		 				

Link to curriculum overview, assessment information and key words

Click here for
Curriculum Overview







y6 Curriculum plan: computer science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 6	Advertisers	Simulators	Advanced problem solvers	Web developers	Game developers	
	<p>Key Elements:</p> <ul style="list-style-type: none"> • New Technology • Video Export • Multimedia • Design • Create 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Simulation • Model • Excel • Constants • Variables 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Flowcharts • Flowol • Mimic • Sequences • Decisions 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Internet • Webpage • HTML • Data Packets 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Scratch • Blocks • Variables • Program • Pacman 	
				  	   	

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y7 Curriculum plan: computer science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Hardware	Data structures	Algorithms	HCI	Programming	
	<p>Key Elements:</p> <ul style="list-style-type: none"> • Input • Output • Storage • Processing • Internal • External 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Data type • Validation • Binary • Bitmap Image • Run-length coding 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Algorithm • Sequence • Variable • Loop • Decomposition 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Interface • Interaction • Human • Computer • Macro 	<p>Key Elements:</p> <ul style="list-style-type: none"> • Scratch • Blocks • Variables • Program • Conditional • Randomised 	
					 	

Link to curriculum overview, assessment information and key words

[Click here for Curriculum Overview](#)

y8 Curriculum plan: computer science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 8	<p>Networks</p> <p>Key Elements:</p> <ul style="list-style-type: none"> • Internet • Connectivity • Topology • Client-Server • Encryption 	<p>Spreadsheet modelling</p> <p>Key Elements:</p> <ul style="list-style-type: none"> • Validation • Conditional Formatting • Formulae • Functions 	<p>Algorithms II</p> <p>Key Elements:</p> <ul style="list-style-type: none"> • Sorting • Searching • Python • Bubble • Bucket 	<p>Graphics</p> <p>Key Elements:</p> <ul style="list-style-type: none"> • Vector images • Bitmap images • Contrast • Saturation • Layer Masks 	<p>Programming (interim 20-21)</p> <p>Key Elements:</p> <ul style="list-style-type: none"> • Scratch • Blocks • Variables • Program • Conditional • Randomised 	
	 	 	  		 	

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In computer science we will introduce and build upon skills that were acquired in 1st school and through a range of practical activities and theory, give an understanding of how computers work including programming, digital artefacts and hardware

welcome

Computer science LEARNING JOURNEY



Year 5

In year 5 you receive 1 lesson of CS and 1 lesson of IT. CS focusses on how computers work and creating digital artefacts. IT focusses on how to use computer applications

CS – Photography
Understand how digital photography works, take images and edit them

IT – E Safety
Understanding the importance of being safe on the internet.

CS - Architects
Creating a 3-D model of a virtual art gallery incorporating images from the previous module

CS - DJs
Creating a podcast combining your own voice, different tracks and recordings

CS – Programmers
Using Scratch to create a basic maze

Year 6

E-Safety
As with all years you will learn about an element of e-safety

We are advertisers.
Using Audacity for recording jingles and speech. Simulation
Creating a theme park using excel, formulae
Introduction to game developing using Scratch.

We are simulators
Using Excel to understand simulations and build models

CS – Advanced Problem Solvers
Using Flowol to create more advanced flowcharts that control mimics of real-life

Computer systems
Studying what happens inside the computer, looking at Input, output, internal and external components.

E-Safety
As with all years you will learn about an element of e-safety

KS3 computer science will build on the learning skills you developed in Year 5 and 6.

Year 7

Data types -
Looking at different data types and validity. Introducing binary and bitmap images

Algorithms –
Understanding how algorithms work, their purpose and applying it to more complex real-life mimics on Flowol

CS – Game Developers
Using Scratch to create the classic Pac-Man game

Introducing the world of web designing.
Understand how pages from the internet are created.
Have the opportunity to design their own web page.



goodbye.



Year 9 you will continue to build on your computer knowledge and skills.



Programming – Creating either a Shark Eating Fish game or a version of the classic game Pong using randomised features

E-Safety
As with all years you will learn about an element of e-safety

Networks
Learning about how the internet works, how computers link together and 'the cloud'.

Spreadsheets
Understanding validation, conditional formatting, formulae and functions whilst creating a model

Graphics –
Understanding vector and bitmap images. Making edits to pictures using different tools

Games programming
You will create a more advanced computer game than you have made previously

Opportunities
To join the robotics club, programming robots that are created