Key Stage 3 Curriculum

Computer Science

In Year 7 Students will study:

THE WINSFORD ACADEMY

	Winter Term		Spring Term		Summer Term	
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
	Introduction to Computers	Using Media to Gain Support	Clear Messaging in Digital Media	Computer Systems	Modelling Data	Programming Essentials in Scratch
Content	A unit designed to help pupils become familiar with the school network, and provide a reminder of important online safety messages (respecting others, spotting dangers, etc)	A unit for pupils to develop their understanding of IT and digital literacy skills. They will use the skills learnt across the unit to create a blog post about a real-world cause that they would like to gain support for. Learners will develop software formatting skills and explore concerns surrounding the use of other people's work.	This unit allows pupils to build upon their learning at Key Stage 2 in a range of different software skills, focusing on poster and presentation production	This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs/	A unit that takes learners from having very little knowledge of spreadsheets to being able to confidently model data with a spreadsheet, using basic formulas to writing their own COUNTIF statements.	The aim of this unit 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.
National Curriculum Elements	Create, re-use, and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability. 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	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 Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	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 Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Understand how instructions are stored and executed within a computer system	Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems 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	Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures (e.g. lists, tables, or arrays); design and develop modular programs that use procedures or functions Understand simple Boolean logic (e.g. and, or, and not) Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Homework	2 pieces to check understanding of concepts taught	2 pieces to check understanding of concepts taught	2 pieces to check understanding of concepts taught	2 pieces to check understanding of concepts taught	2 pieces to check understanding of concepts taught	2 pieces to check understanding of concepts taught
Cultural Capital	Technical – marketable skills (use of internet and IT equipment) Emotional – empathy (effects of e-bullying, etc.)	Technical – marketable skills (use of productivity software) Emotional – empathy (effects of e-bullying, etc.)	Technical – marketable skills (use of productivity software)	Technical – marketable skills (use of systems)	Technical – marketable skills (use of productivity software)	Technical – marketable skills (problem solving techniques, basic programming)
Assessment	Baseline testing - Simple multiple-choice test to see knowledge obtained / retained from KS2 Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 1 to show progress over the year	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 2 to show progress over the year

In Year 8 Students will study:

	Winter Term		Spring Term		Summer Term	
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
	Networking	Vector Graphics	Developing for the Web	Representations – from Clay to Silicon	Mobile App Development	Intro to Python Programming
Content	This unit begins by defining a network and addressing the benefits of networking, and how data is transmitted across networks. Learners will develop an understanding of the terms 'internet' and 'World Wide Web'. Practical exercises are included throughout to help strengthen understanding.	Vector graphics can be used to design anything from logos, icons and posters. Through this unit, students will understand the processes involved in with graphics and will be provided with the knowledge and tools to create their own.	Learners will explore the internet and World Wide Web, investigating how websites are organised for effective retrieval using search engines, and protection from the threats that a connected world brings.	This unit covers the use of binary in digital representations. The activities gradually introduce learners to binary digits and how they can be used to represent text and numbers.	This unit takes learners from designer to project manager to developer to create their own mobile app. Learners will have an opportunity to build on the programming concepts they used in previous units before undertaking their project	This unit introduces learners to text-based programming with Python. They start with simple programs and gradually move to arithmetic operations, randomness, selection, and iteration.
National Curriculum Elements	Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Understand how instructions are stored and executed within a computer system	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 Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits	Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables, or arrays]; design and develop modular programs that use procedures or functions Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems Understand how instructions are stored and executed within a computer system Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

Homework	2 pieces of written homework to check understanding of concept taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught
Cultural Capital	Technical – marketable skills (use of internet and IT equipment)	Technical – marketable skills (use of vector graphic program to create marketable assets)	Technical – marketable skills (understanding of the internet / WWW) Objective – works of art (websites as a work of art and for their content)	Technical – marketable skills (use of binary representation for assets)	Technical – marketable skills (app development)	Technical – marketable skills (use of text-based programming language)
How you will be assessed	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 1 to show progress over the year	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 2 to show progress over the year

In Year 9 Students will study:

	Winter Term		Spring Term		Summer Term	
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
	Digital Interactive Presentations	Data Science	Brands and Branding	Cyber Security	Animation	Representations: Going Audio-visual
Content	Learners will be introduced to the concepts of the DIPs, and on their uses in the real world. Learners will then create a DIP for a given scenario, understanding the processes used to make these engaging.	Learners will be introduced to data science and will know how to use data to investigate problems and make changes to the world around them. Learners will be exposed to both global and local data sets and gain an understanding of how visualising data can help with identifying patterns and trends.	Learners will get acquainted with the concept of branding, looking at why companies brand themselves and the 'science' behind branding design. Learners will then use these design concepts in tasks to enable them to create their own brand designs.	This unit looks at techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks. They will look at social engineering techniques, hacking, DDoS attacks, and malware, as well as looking at methods to protect ourselves.	In this unit learners will discover how 3D animations are made. Learners will gain an understanding of how this is used to make the media products. Learners will go through the basics of modelling, texturing, and animating.	In this unit, learners will focus on digital media such as images and sounds and discover the binary digits that lie beneath these types of media. They will draw on familiar examples to illustrate these ideas and bring them together in a coherent narrative.
National Curriculum Elements	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 Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability 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	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	Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	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	Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

Homework	2 pieces of written homework to check understanding of concept taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught	2 pieces of multiple-choice questions to check understanding of concepts taught
Cultural Capital	Technical – marketable skills (use of IT equipment)	Technical – marketable skills (understanding of 'big' data)	Technical – marketable skills (use of IT equipment)	Technical – marketable skills (cyber security processes)	Technical – marketable skills (creation of animations) Objective – cultural goods (animations)	Technical – marketable skills (use of binary to represent digital audio assets)
Assessment	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 1 to show progress over the year	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions	Use of lesson re-cap to re-enforce knowledge at end of lessons and start of subsequent lessons Assessment of knowledge by use of multiple-choice questions testing and extended writing questions Assessment Point 2 to show progress over the year