

George Stephenson High School Secondary Scheme of Work: Year 7

Unit	Lessons	Key Progression Indicators Knowledge, Understanding and Skills
Unit 1 – Under the hood of the computer	6	<ul style="list-style-type: none"> • Understand the hardware computer systems and how they communicate with one another • Students can name the internal components of a computer and describe their function
Unit 2 – Think like a Computer Scientist	3	<ul style="list-style-type: none"> • Understand the term ‘Computational thinking’ and that Computer Science is about problem solving • Understand that problems can be decomposed into smaller parts • Understand how complex problems can be decomposed into smaller parts
Unit 3 - My LOL cat – creating a virtual pet	7	<ul style="list-style-type: none"> • To become familiar with building simple algorithms, making use of the three core-programming concepts; sequence, selection, and iteration. • To developing their problem solving and mathematical skills. • Understanding and making use of data structures (lists)
Unit 4 - E-Safety	5	<ul style="list-style-type: none"> • 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
Unit 5 – How the web works	5	<ul style="list-style-type: none"> • Understand what the internet is and how computers are connected together • Understand how the www works • Understand how data travels around the internet
Unit 6 –Harry Potter Spreadsheet Modelling	4	<ul style="list-style-type: none"> • To be able to interrogate data • Understand the term ‘Modelling’ and that Excel is a piece of software we can use to model real life situations • Create a simple model using formulae and make use of basic formatting features
Unit 7 – Making Shapes with Python	4	<ul style="list-style-type: none"> • Introduction to Python a text based language • Understand how to use iteration using Python turtle to draw repeating patterns

Year 7 Computing Calendar

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	
Intro to the systems		Unit 1					KAT		Unit 2			Unit 3	

Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
			KAT		Unit 4					Unit 5		

Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39
		Unit 6				Unit 7	End of Year Assessment					

George Stephenson High School Secondary Scheme of Work: Year 8

Unit	Lessons	Key Progression Indicators Knowledge, Understanding and Skills
Unit 1 - Representing images	4	<p>Be able to reproduce an image on a pixel grid in one-bit colour</p> <p>Be able to reduce the colour depth on an image and predict the change in quality</p> <p>Be able to produce an image on a pixel grid in one-bit colour from binary code</p> <p>Understand the relationship between colour depth, quality and file size</p> <p>Understand that the vertical and horizontal pixels describe screen resolution</p> <p>Understand the difference between a vector and bitmap</p> <p>Know what is meant by the term 'pixel density'</p>
Unit 2 - Binary	4	<p>Know the value of each bit of an 8-bit binary string; and be able to convert a decimal number to binary.</p> <p>Be able to convert a decimal number to binary (1-255);</p> <p>Be able to convert a binary number to decimal (1-255) and be able to count in binary to 8 bits.</p> <p>Be able to add two 4-bit binary numbers together</p> <p>Be able to add two 8-bit binary numbers together</p> <p>Be able to recognise and explain binary overflow when adding two 8-bit binary strings.</p>
Unit 3 - Instruction Set Design	6	<p>Be able to record a sequence of instructions of a given instruction list</p> <p>Be able to identify different routes to a destination and find a route with the least number of instructions</p> <p>Understand that sensors are used to collect inputs in order to make decisions</p> <p>Know that the more instructions that are used, the more memory is needed</p> <p>Understand how selection statements can be used to provide alternate paths in a solution</p> <p>Be able to sequence a set of selection statements</p> <p>Be able to combine selection and the Boolean operators AND, OR and NOT</p>
Unit 4 - E safety + Digital Literacy	5	<p>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</p> <p>Be able to plan communication projects, considering audience needs and expectations, purpose and environment</p> <p>Be able to extract, combine and modify relevant information for a specific purpose, and structure and sequence this to meet audience needs</p> <p>Be able to modify and develop text, images, tables and sounds from several sources within the structure of a piece of work</p> <p>Be able to use a range of ICT tools efficiently to refine the presentation of information for a specific purpose</p>

Unit 5 - Web development	6	Be able to use web authoring software to create a website Be able to create a website that is suitable for audience and purpose Be able to collect relevant and suitable digital artefacts for a given purpose Be able to obtain feedback from others and make improvements Be able to set and assess the website against a set of criteria.
Unit 6 – Sorted!	3	Be able to explain what is meant by a sorting algorithm. Be able to describe how the Bubble Sort algorithm works Be able to code the Bubble Sort algorithm with structured guidance; will use iteration to move through a list one item at a time.
Unit 7 - Python Rock Paper Scissors	4	Be able to program a game of Rock Paper Scissors in Python Be able to understand the Random.Randint function in Python Be able to map out all of the possible outcomes in a truth table
Unit 8 – Band Manager spreadsheet modelling	4	Be able to recognise the difference between rules and variables and that the rules contained within a model determine its output. Be able to make more complex predictions based on several variables Be able to amend existing simple models by changing variables and formulae Be able to be able to use Goal Seek and Absolute Cell referencing

Year 8 Computing Calendar

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Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26
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Unit 6			Unit 7				Unit 8			End of Year Assessment		

George Stephenson High School Secondary Scheme of Work: Year 9

Unit	Lessons	Key Progression Indicators Knowledge, Understanding and Skills
Unit 1 - E safety + Dig Literacy	5	Understands 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
Unit 2 - Cracking the code	5	The first Lesson revisits binary coding and shows its importance in the digital world, considering ASCII and other coding systems This unit aims to provide students with an understanding of cyphers, encryption and decryption, and the different methods used to encrypt throughout history. The challenge is to invent a cypher or secret code that only one other person understands – the student is a secret agent who needs to send an encrypted classified message, via email, to a fellow-spy in another country.
Unit 3 - Networks	4	Be able to appreciate that computers use a number of different protocols to achieve different tasks on a network. Be able to trace the origin and path of an email, and know the application layer presents the abstraction of direct application-to-application communication. Be able to make an informed decision on which protocol, POP3 or IMAP, is better for a given situation, and know how communication is passed through the layers of abstraction, across a physical network and back up again.
Unit 4 - Python and the Microbit	6	Be able to build upon the Python skills obtained in Year 7 and 8 and undertake a programming project that incorporates the Microbit.
Unit 5 - Game of Life spreadsheet modelling	6	Be able to model a spreadsheet using more complex functions and formulae Be able to use more complex functions such as Conditional formatting, equations in graphs and use real life scenarios to model personal finance
Unit 6 – Web/App design Crawdale Circus	5	Be able to 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 Be able to create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability

Unit 7 – Artificial Intelligence	5	Understands common uses of Computer Science beyond the classroom. Recognises ethical issues surrounding the application of information technology beyond school.
		Identifies and explains how the use of technology can impact on society. Explains and justifies how the use of technology impacts on society, from the perspective of social, economical, political, legal, ethical and moral issues. Understands the existence of legal frameworks governing the applications of technology.

Year 9 Computing Calendar

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