

KS3 COMPUTER SCIENCE CURRICULUM MAP

Years 7, 8 & 9.

Covering 'National Curriculum Computing Programmes of Study' (from September 2014)

1. design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
2. understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
 - a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems;
 - b. make appropriate use of data structures [for example, lists, tables or arrays]; design
 - c. and develop modular programs that use procedures or functions
3. understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
4. understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
5. understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
6. 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
7. create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
8. 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.

Curriculum Maps

Year 7

Yr7-T1a

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptor
1	Introduction to the school network. <i>How do I access the school network?</i> <i>What is on the school network?</i>	4. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	Understanding the bigger picture	Systems & Using IT
3	Base line testing			Systems & Using IT
2	Rules and behaviour online <i>How should I behave online?</i> <i>How do people behave online?</i>	8. 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.	Observe and express	Systems & Using IT
4	Hardware Basic PC components (diagram) The CPU Peripherals Input and output devices Storage and communications devices	4. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	Develop expertise	Systems & Using IT
5	Software Translators, Operating Systems, Packages (applications), Utility Software		Develop expertise	Systems & Using IT
6	Social Networks and e-safety <i>What is Social Networking?</i> <i>Give examples of Social networking?</i> <i>What are the advantages and disadvantages of social networking?</i> <i>Why are some services free?</i>	8. 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.	Reflect	Systems & Using IT
7	e-safety <i>What are my rights and responsibilities?</i>			
8	Re-do Base line testing			Systems & Using IT

Yr7-T1b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptor
1	Introduction to programming through 'Scratch' – Simple program with image created and edited by student. Lesson 7 Cat & Dog.	<p>3a. Use two or more programming languages.</p> <p>7. Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability</p>	Engage and persist	Programming
2	Scratch Programming – Lesson 8 Cat & Dog.			Programming
3	Scratch Programming – Lesson 9 Eyes Bloodshot		Stretch and explore	Programming
4	Scratch Programming - Lesson 10 Racing Car Game		Stretch and explore	Programming
5	Scratch Programming - Lesson 11 Racing Car Game			Programming
6	Scratch Programming – Programming - Lesson 12 Racing Car Game			Programming
7	Scratch Program Documentation 1 Complete documenting program (for assessment).	3a. Use two or more programming languages.	Envision/Reflect	Programming
8	Scratch Program Documentation 2 Complete documenting program (for assessment).	3c. Design and develop modular programs that use procedures or functions		Programming

Yr7-T2a

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptor
1	Improving search techniques Understanding of the Internet Understanding of search engines <i>What is a search engine?</i> <i>How can I improve my search techniques?</i>	8a. understand a range of ways to use technology safely, respectfully, responsibly and securely 8b. including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns	Develop expertise	Systems & Using IT
2	Improving search techniques <i>How do search engines rank their results?</i> <i>What data do search engines capture?</i>			Systems & Using IT
3	Understanding of copyright Copyright & Patents Act <i>What can I copy?</i> Searching and using information		Reflect	Systems & Using IT
4	Who's information is it? Acknowledging copyrights when searching Referencing websites and other publications			Systems & Using IT
5	Word processing 1 Text editing Proofing Formatting	1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Observe and express	Systems & Using IT
6	Word processing 2 Tables Graphics/Images ClipArt/Shapes Columns.			Systems & Using IT

Yr7-T2b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Desk Top Publishing 1 What should a promotional flyer look like? Creating a promotional flyer PROJECT	7. Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Understanding the bigger picture	Systems & Using IT
2	Desk Top Publishing 2 Creating a promotional flyer PROJECT		Observe and express	Systems & Using IT
3	Desk Top Publishing 3 Creating a promotional flyer PROJECT		Develop expertise	Systems & Using IT
4	Desk Top Publishing 4 Creating a promotional flyer PROJECT		Develop expertise	Systems & Using IT
5	Desk Top Publishing 5 Creating a promotional flyer PROJECT		Develop expertise	Systems & Using IT
6	Desk Top Publishing 6 Creating a promotional flyer PROJECT HAND IN PROJECT AS ASSESSMENT PIECE		Reflect	Systems & Using IT

Yr7-T3a

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1-3	Binary 1 – intro Teaching about binary numbers Why Binary Simple operations on binary numbers Binary 2 - Conversions Binary-Decimal-Binary conversions Binary 3 – Arithmetic More complex conversions Simple binary arithmetic	3. Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	Develop expertise	Systems & Using IT
4	Binary Assessment		Reflect	Systems & Using IT
5	Binary Logic		Stretch and explore	Systems & Using IT

Yr7-T3b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Databases 1 – Lesson 1 <i>How do firms keep track of their customers?</i> <i>What are databases?</i> <i>Examples where databases are used</i> MS Access- Simple database components Tables,	1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Understanding the bigger picture	Modelling
2	Databases 2 – Lesson 2 MS Access- Simple database components Queries, Forms			Modelling
3	Databases Project 1	1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Observe and express	Modelling
4	Databases Project 2			Modelling
5	Databases Project 3	6. 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.		Modelling
6	EXTRA Combining applications (MS Access) Mail merge functionality			Modelling
			Stretch and explore	Modelling

Year 8**Yr8-T1a**

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Networks1 Transfer of information between computers	4. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	Understanding the bigger picture	Systems & Using IT
2	Networks2 Topologies			Systems & Using IT
3	e-safety <i>What are the laws that pertain to IT?</i> <i>What are my rights?</i>	8. 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.	Observe and express	Systems & Using IT
4	Data Protection Relation to e-safety			Systems & Using IT
5	Sound editing Audio creation, editing, use, applications Sound editing Project -pt1 Create a radio commercial	6. 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. 7. create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Develop expertise	Systems & Using IT
6	Sound editing Project –pt2 Create a radio commercial ctd.			Systems & Using IT
7	Sound editing Project –pt3 Create a radio commercial ctd.			Systems & Using IT

Yr8-T1b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Document Sound Editing Project 1.	6. 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.	Develop expertise	Systems & Using IT
2	Document Sound Editing Project 2.		Develop expertise	Systems & Using IT
3	Document Sound Editing Project 3. Use as assessment piece		Reflect	Systems & Using IT
4	Website Design – HTML pt1 <i>What is a web site? What should a website look like? Create a simple HTML page</i>	<p>1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems</p> <p>6. 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.</p>	Engage and persist	Systems & Using IT/Modelling
5	Website Design – HTML-pt2 <i>Create a simple HTML page ctd.</i>	<p>1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems</p>		Modelling
6	Website Design – HTML-pt3 <i>Create a simple HTML page ctd.</i>	6. 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.		Modelling
7	Web site Project 1 (Assessment)			Modelling
8	Web site Project 1 (Assessment) ctd.	7. create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability		Modelling

Yr8-T2a

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Instructions – 1	5. Understand how instructions are stored and executed within a computer system	Develop expertise	Systems & Using IT
2	Instructions - 2		Develop expertise	Systems & Using IT
3	Instructions - 3		Stretch and explore	Systems & Using IT
4	Instructions – 4 Assessment (Exam questions)		Envision	Systems & Using IT
5	Python Programming Tutorial 1	2a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; 2b. make appropriate use of data structures [for example, lists, tables or arrays]; design 2c. and develop modular programs that use procedures or functions.		Programming
6	Python Programming Tutorial 1 ctd.			Programming

Yr8-T2b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Python Programming Tutorial 2	<p>2a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems;</p> <p>2b. make appropriate use of data structures [for example, lists, tables or arrays]; design</p> <p>2c. and develop modular programs that use procedures or functions.</p>	Engage and persist	Programming
2	Python Programming Tutorial 2 ctd.		Develop expertise	Programming
3	Python Programming Tutorial 3		Develop expertise	Programming
4	Python Programming Tutorial 4		Develop expertise	Programming
5	Python Programming Tutorial 4 ctd.		Stretch and explore	Programming
6	Python Programming Tutorial 5		Envision	Programming

Yr8-T3a

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Python Programming Tutorial 5 ctd.	<p>2a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; 2b. make appropriate use of data structures [for example, lists, tables or arrays]; design 2c. and develop modular programs that use procedures or functions.</p>	Understanding the bigger picture	Programming
2	Python Programming Tutorial 6		Observe and express	Programming
3	Python Programming Tutorial 6 ctd.		Develop expertise	Programming
4	Python Programming Tutorial 7		Develop expertise	Programming
5	Python Programming Tutorial 8 Assessment		Reflect	Programming
6	Python Programming Tutorial 8 ctd. Assessment		Reflect	Programming

Yr8-T3b

Lesson	Topics	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Python Exercises Use 46 Simple Python Exercises.docx	<p>2. understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem</p> <p>2a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems;</p> <p>2b. make appropriate use of data structures [for example, lists, tables or arrays]; design</p> <p>2c. and develop modular programs that use procedures or functions.</p>	Understanding the bigger picture	Analysis, Development & Programming
2	Python Exercises Use 46 Simple Python Exercises.docx		Observe and express	Analysis, Development & Programming
3	Python Exercises Use 46 Simple Python Exercises.docx		Develop expertise	Analysis, Development & Programming
4	Python Exercises Use 46 Simple Python Exercises.docx		Develop expertise	Analysis, Development & Programming
5	Python – Project 3-pt1		Reflect	Analysis, Development & Programming
6	Python – Project 4-pt2		Reflect	Analysis, Development & Programming

Year 9**Yr9 -T1**

Lesson	Topics	Notes	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	HTML/ JavaScript		<p>2a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems;</p> <p>GCSE – SQL & Database systems</p> <p>2. understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem</p>	Understanding the bigger picture	Analysis, Development & Programming
2	HTML/ JavaScript			Develop expertise	Analysis, Development & Programming
3	HTML/ JavaScript	Assessment Exercise		Reflect	
4	Database SQL			Develop expertise	Analysis, Development & Programming
5	Database SQL			Develop expertise	Analysis, Development & Programming
6	Database SQL	Assessment – Exam questions and homework		Reflect	Analysis, Development & Programming

Yr9 –T2

Lesson	Topics	Notes	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Decriptors
1	Python Project Coding (Album Chart, Phone Diag...etc)		2. understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem 3a. use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; 3b. make appropriate use of data structures [for example, lists, tables or arrays]; design 3c. and develop modular programs that use procedures or functions.	Develop expertise	Analysis, Development & Programming
2	Python Project Coding			Stretch and explore	Analysis, Development & Programming
3	Python Project Coding			Stretch and explore	Analysis, Development & Programming
4	Python Project Coding			Stretch and explore	Analysis, Development & Programming
5	Python Project Coding			Stretch and explore	Analysis, Development & Programming
6	Python Project Coding	Assess code to GCSE marking scheme		Reflect	Analysis, Development & Programming

Yr9 –T3

Lesson	Topics	Notes	Learning Outcomes/NC Descriptor Mapping	Learning Habits	Descriptors
1	Python Project Writeup		6. 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 7. create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Envision	Analysis
2	Pseudo Code/Flowcharts			Envision	Analysis
3	Testing Alpha			Develop expertise	Analysis
4	Testing Beta			Develop expertise	Analysis
5	General Project (Evaluation, etc)			Envision	Analysis
6	General Project (Evaluation, etc)	Assess writeup to GCSE marking scheme		Reflect	Analysis