Computer Science

Year 9 Curriculum Map

Year 9 – Autumn Term

Prior Learning	The skills, knowledge and understanding studied through the year 7 and year 8 curriculum provides the essential basis for year 9. The learning covered, particularly through aspects of computing hardware, system security and social media will provide a foundation for studying the ethical, legal, environmental, and cultural aspects of the impact that digital technology has on the world, create debates and separate fact from opinion. The units of work also relate back to year 8 and the aspects of legislation in cybercrime and security.
What will I learn?	**Digital Impacts of Technology –** This unit of work allows pupils to debate, discuss and express opinion based on ethical, legal, environmental, and cultural aspects of digital technology. Pupils will also look at possible careers in cyber security such as ethical hacking and network security advisors. **Advanced Python Programming** – Pupils will draw upon the skills, knowledge and understanding from year 7 and year 8 in order to fully access advanced text-based programming. Pupils will build skills, ready to take into key stage 4, completing tasks based on sub-routines, flowcharts, functions, lists, string handling, pseudocode, refining programs and testing.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Next Steps	The Digital Impacts of Technology will be revisited at key stage 4 where pupils are required to write extensively on topics centred around ethical, legal, cultural, and environmental issues based on the impacts of Computer Science and the constant evolvement of modern technologies. Pupils will continue to build on their python programming skills during the next term when they continue the Advance Python programming unit.
Opportunities for Independent Learning	The Computer Science department are continually updating links to extra learning activities to benefit our pupils. Below, there are links to multiple websites and video sharing sites that pupils can use for independent learning. www.gcsepod.com – Preparing for Computer Science at KS4 www.educake.co.uk – formal and informal testing for pupils. www.quizizz.com – interactive learning for pupils with a competitive edge. https://www.bbc.co.uk/bitesize/subjects/zvc9q6f https://www.youtube.com/watch?v=0QiO_H0-ok8 – Copyright Law https://youtu.be/2hqTnmn51Fg - Driverless Cars The department also provides access to a range of resources, posted on Synergy for pupils to access and continue their independent learning. https://fishermore.schoolsynergy.co.uk/
Personal Development and CEIAG	**PSHCE** - In year 9, pupils will also experience the 'Employability Skills' in Computer Science, cross referencing the PSHCE curriculum, providing further opportunities to learn about the realism of life. Pupils will also think about their career aspirations and future skills needed, particularly when opting for Computer Science at KS4 and the learning pathway and opportunities the subject can lead into.

	SMSC – Pupils will have the opportunity to discuss, debate and provide opinions in terms of democracy, mutual respect and tolerance. Pupils will learn about the democratic views and respecting others when studying and discussing ethics, legislation, environment, culture, diversity and environmental issues through the year 9 scheme of learning. **Computing Starters:** To highlight possible career opportunities that are available in Computing/ICT. **Career Focus**: A question for pupils in year 9 to ask themselves is where Computer Science can take them in terms of a future career. Possible careers can include positions in media, applications developer, programmer, systems manager, or cyber security analyst. Pupils will be subjected to these possible careers through the schemes of learning, developing the skills, knowledge and understanding fundamental to the technical nature of the subject. **Further Education Focus**: A-Level IT and Computer Science based courses in FE.
Enrichment Opportunities (Cultural Capital)	The Computer Science department have put together a list of enrichment opportunities available at key stage 3: **Computer Science Club** – Lunchtime activities to build coding skills. **Arcade Gaming Centre, Bury** – https://www.arcadeclub.co.uk/bury/ **Belong Gaming Arenas, Nationwide** - https://www.belong.gg/ The following movies and TV Shows will further enhance the knowledge and understanding of key topic areas: • iRobot • The Theory of Everything

	Year 9 – Spring Term
Prior Learning	Prior learning of text-based and block editor programming in year 7 and year 8 are essential in the delivery of the advance Python programming tasks which year 9 pupils started last term. Bridging the gaps at the start of year 7 is vital to fully complete the key stage 3 Computer Science curriculum, drawing upon and revisiting the skills built over the 3-year period. Pupils will study advanced Python for 1 hour per week over 12 weeks, to ensure they hit the ground running and are able to access the more technical nature of Computer Science, mainly focusing on algorithms, computational thinking, abstraction, decomposition, and programming techniques.
What will I learn?	**Advanced Python Programming** – Pupils will draw upon the skills, knowledge and understanding from year 7 and year 8 in order to fully access advanced text-based programming. Pupils will build skills, ready to take into key stage 4, completing tasks based on sub-routines, flowcharts, functions, lists, string handling, pseudocode, refining programs and testing.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
Next Steps	Advanced programming in the summer term will provide pupils with the skills, knowledge and understanding needed, particularly for paper 2 of the OCR GCSE Computer Science specification, concentrating on computational thinking, algorithms and programming. For those pupils who have chosen GCSE Computer Science as an option at key stage 4,

	now have a solid foundation of the skills, knowledge and understanding required when programming. This also lends itself to the opportunity for those pupils wanting to pursue a career in a Computer Science related discipline, where there are wide ranging courses and opportunities through BTEC Vocational and A-Level courses in FE.
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Personal Development and CEIAG	**PSHCE** - In year 9, pupils will also experience the 'Employability Skills' in Computer Science, cross referencing the PSHCE curriculum, providing further opportunities to learn about the realism of life. Pupils will also think about their career aspirations and future skills needed, particularly when opting for Computer Science at key stage 4 and the learning pathway and opportunities the subject can lead into. **SMSC** – Pupils will have the opportunity to discuss, debate and provide opinions in terms of democracy, mutual respect and tolerance. Pupils will learn about the democratic views and respecting others when studying and discussing ethics, legislation, environment, culture, diversity and environmental issues through the year 9 scheme of learning. **Computing Starters:** To highlight possible career opportunities that are available in Computing/ICT. **Career Focus**: A question for pupils in year 9 to ask themselves is where Computer Science can take them in terms of a future career. Possible careers can include positions in media, applications developer, programmer, systems manager, or cyber security analyst. Pupils will be subjected to these possible careers through the schemes of learning, developing the skills, knowledge and understanding fundamental to the technical nature of the subject. **Further Education Focus**: A-Level IT and Computer Science based courses in FE.
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Year 9 – Summer Term

Prior Learning	The spring term leads directly on from the autumn term where pupils continue to develop their work ready skills when completing the Digital Literacy units of work. Pupils will also be moving on to more challenging aspects of data representation, building on the skills from year 7 and year 8 that has provided the foundation for studying Boolean Logic, Hexadecimal and Programming. The beginner programming, intermediate programming and data representation topics in year 7 and year 8 are essential units of study prior to delivering these units. Coordinating with the Maths department also provides essential prior learning based on the arithmetic and numerical nature of the Computer Science curriculum.
What will I learn?	**Digital Literacy (Spreadsheet Skills)** - Following on and linking back to prior learning, pupils will further enhance their given digital literacy project in creating spreadsheets using Excel. Pupils will learn how to use conditional formatting, lists, IF statements (nested IF statements for more able pupils), V Lookups, Pivot Tables, Slicers, and Macros. These are essential skills for the world beyond school in becoming work ready. **Boolean Logic and Hexadecimal** – In this unit of work, pupil will advance on to technical and mathematical aspects of Computer Science. Pupils will make the distinction between logic gates, complete truth tables, write and analyse Boolean expressions. Pupils will draw upon experiences from the Maths curriculum in terms of BIDMAS, particularly when completing Boolean expressions. Pupils will also learn the importance of using Hexadecimal and the reasons programmers use it distinguishing between high-level and low-level programming languages.
Next Steps	Binary, Hexadecimal and Boolean Logic will be revisited at key stage 4 for those pupils who have selected Computer Science as an option, where pupils are required to use cross curricular links through Maths to solve equations and expressions, building on prior learning in year 8 and year 9.
How will I be assessed?	**Practical and Formal Assessments** - Each unit of work is assessed in two ways. The first being the practical and project-based learning and the second form of assessment will be a summative, online assessment. **Formative Assessment** - will take place as part of recall and retrieval practice, low stakes testing, self and peer assessment to identify gaps in knowledge, monitoring and tracking progress throughout.
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