

2022-2023 Year 11 Curriculum and Assessment Plan for Computer Science

The curriculum and assessment of pupils at this stage of education has been carefully designed to					
Support all students to understand and apply the key principles of computer science. This includes abstraction, decomposition, logic algorithms. Students will be able to analyse problems and use practical skills to solve, such as designing, writing, and debugging programs. They will be able to think creatively, logically, and critically and understand the components that make up systems and how they communicate with each other. Students will also understand the impacts of digital technology to wider society.					
Half Term 1: All pupils will know: Programming Practical Project 2.3 Producing Robust Programs All pupils will be assessed by: MCQ Impact- Why do we teach this? Students will be able to put into practice the many skills they have developed during their first year of the course. They will be given multiple programming challenges in their lessons for them to solve. They will need to apply computational thinking to the problem posed to them and plan and design their own algorithms. They will also be expected to plan test data and how to make their programme is robust and ensure maintainability. Once they have planned, they will then develop their code using Python Programming language and to ensure they test their code during and post production. This will enable the students to gain valuable experience of software development and will prepare them for any future employment they might wish to pursue in development as well as giving them valuable experience for any future courses such as the A Level. To further their programming skills, they will study various defensive design considerations as well as maintainability. This will allow them to produce more robust applications ready for general use. The students will study the different types of tests during development as well as syntax errors and logic errors. This will allow them to produce and complete test data and test plans.	Subject specific skills being developed: <ul style="list-style-type: none"> develop and apply their analytic, problem-solving, design, and computational thinking skills can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems 	Half Term 2: All pupils will know: Programming Practical Project 2.4 Boolean Logic All pupils will be assessed: MCQ End of Unit tests Impact - Why do we teach this? The students will also learn how to create and read simple logic diagrams using the operators AND, OR and NOT. They will expand their knowledge of the truth tables for each logic gate. They will understand how to create, complete and edit logic diagrams and truth tables for given scenarios. This will expand on prior knowledge developed from systems architecture and memory and storage expanding students overall understanding of the workings of a computer. Students will be able to put into practice the many skills they have developed during their first year of the course. They will be given multiple programming challenges in their lessons for them to solve. They will need to apply computational thinking to the problem posed to them and plan and design their own algorithms. They will also be expected to plan test data and how to make their programme is robust and ensure maintainability. Once they have planned, they will then develop their code using Python Programming language and to ensure they test their code during and post production. This will enable the students to gain valuable experience of software development and will prepare them for any future employment they might wish to pursue in development as well as giving them valuable experience for any future courses such as the A Level.	Subject specific skills being developed: <ul style="list-style-type: none"> can evaluate and apply information technology, including new or unfamiliar technologies, develop their capability, creativity and knowledge in computer science, can understand and apply the fundamental principles and concepts of computer science, 	Half Term 3: All pupils will know: 2.5 Programming languages and IDE's Component 1 Revision All pupils will be assessed: MCQ End of Unit tests Impact - Why do we teach this? The further help them become stronger developers they will expand their knowledge of different IDE's and the tools and facilities included in them. This will give them practical experience of using a wide range of tools in the development of software which will build on prior knowledge that they have acquired during their practical project. Students will then begin to revisit older units that they have previously studied during this course. This allows for misconceptions to be addressed and will further support students' knowledge of units studied at the start of the course. This time can also be used to work through students' examination skills and further build their confidence and understanding of the computer science GCSE	Subject specific skills being developed: <ul style="list-style-type: none"> can understand and apply the fundamental principles and concepts of computer science, develop and apply their analytic, problem-solving, design, and computational thinking skills understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns. understand several key algorithms that reflect computational thinking
	Reading Skills needed for this unit: Key Vocabulary: Variable, constant, i/o, data types, sequence, selection, Iteration, count/condition-controlled loop, IDE, editors, error diagnostics, run-time environment, Abstraction, decomposition, binary/linear search,		Reading Skills needed for this unit: Key Vocabulary: Truth tables, Boolean operators, Low/high level language, IDE, editors, error diagnostics, run-time environment, Variable, constant, i/o, data types, sequence, selection, Iteration, count/condition-controlled loop, IDE, editors,		Reading Skills needed for this unit: Key Vocabulary: high level language, translator, assembler, compiler, interpreter, IDE, error diagnostics, run-time environment,

	bubble/merge/insertion sort, pseudocode, flow chart error diagnostics, run-time environment, Defensive design, maintainability, iterative/final testing, syntax/logic errors, test data				
	Opportunity for cross-curricular skill development <ul style="list-style-type: none"> Numeracy – Algorithms, number systems and units of measure in Computer Science, and network protocols. 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> Digital Literacy across all subjects – The ability to find, evaluate, utilize, share and create content using Information Technologies and the Internet. Numeracy – Algorithms, number systems and units of measure in Computer Science, and network protocols. 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> Digital Literacy across all subjects – The ability to find, evaluate, utilize, share and create content using Information Technologies and the Internet. Numeracy – Algorithms, number systems and units of measure in Computer Science, and network protocols. Literacy – The importance of checking content accuracy and proof –reading own content and utilizing the tools provided through IT. The use of appropriate language and formatting in professional documents.
Half Term 4: All pupils will know: Component 1 and Component 2 revision All pupils will be assessed:	Subject specific skills being developed: <ul style="list-style-type: none"> understand how changes in technology affect safety, including new ways to protect their 	Half Term 5: All pupils will know: Component 1 and Component 2 revision All pupils will be assessed:	Subject specific skills being developed: <ul style="list-style-type: none"> develop and apply their analytic, problem-solving, design, and computational thinking skills 	Half Term 6: All pupils will know: Component 1 and Component 2 revision All pupils will be assessed:	Subject specific skills being developed: <ul style="list-style-type: none"> develop their capability, creativity and knowledge in computer science, digital media and

<p>MCQ End of Unit tests</p> <p>Impact - Why do we teach this?</p> <p>Students will then begin to revisit older units that they have previously studied during this course. This allows for misconceptions to be addressed and will further support students' knowledge of units studied at the start of the course.</p> <p>This time can also be used to work through students' examination skills and further build their confidence and understanding of the computer science GCSE</p>	<p>online privacy and identity, and how to identify and report a range of concerns.</p> <ul style="list-style-type: none"> develop and apply their analytic, problem-solving, design, and computational thinking skills can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems 	<p>MCQ End of Unit tests</p> <p>Impact - Why do we teach this?</p> <p>Students will then begin to revisit older units that they have previously studied during this course. This allows for misconceptions to be addressed and will further support students' knowledge of units studied at the start of the course.</p> <p>This time can also be used to work through students' examination skills and further build their confidence and understanding of the computer science GCSE</p>	<ul style="list-style-type: none"> can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems 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 	<p>Examinations</p> <p>Impact- Why do we teach this?</p> <p>Students will then begin to revisit older units that they have previously studied during this course. This allows for misconceptions to be addressed and will further support students' knowledge of units studied at the start of the course.</p> <p>This time can also be used to work through students' examination skills and further build their confidence and understanding of the computer science GCSE</p>	<p>information technology develop and apply their analytic, problem-solving, design, and computational thinking skills</p> <ul style="list-style-type: none"> can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
	<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: open source/proprietary software, Data Protection/Computer Misuse/Freedom of Information/Copyright Designs & Patents Act, Creative Commons Licensing, Variable, constant, i/o, data types, sequence, selection, Iteration, count/condition-controlled loop</p>		<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: Variable, constant, i/o, data types, sequence, selection, Iteration, count/condition-controlled loop, Truth tables, Boolean operators, Low/high level language, IDE, editors, error diagnostics, run-time environment</p>		<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: Low/high level language, translator, assembler, compiler, interpreter, IDE, error diagnostics, run-time environment, Defensive design, maintainability, iterative/final testing, syntax/logic errors, test data</p>
	<p>Opportunity for cross-curricular skill development</p> <ul style="list-style-type: none"> Digital Literacy across all subjects – The ability to find, evaluate, utilize, share and create content using Information Technologies 		<p>Opportunity for cross-curricular skill development</p> <ul style="list-style-type: none"> Digital Literacy across all subjects – The ability to find, evaluate, utilize, share and create content using Information Technologies and the Internet Numeracy – Algorithms, 		<p>Opportunity for cross-curricular skill development</p> <ul style="list-style-type: none"> Digital Literacy across all subjects – The ability to find, evaluate, utilize, share and create content using Information Technologies and the Internet.

	<p>and the Internet</p> <ul style="list-style-type: none"> Numeracy – Algorithms, number systems and units of measure in Computer Science, and network protocols. Literacy – The importance of checking content accuracy and proof –reading own content and utilizing the tools provided through IT. The use of appropriate language and formatting in professional documents 		<p>number systems and units of measure in Computer Science, and network protocols.</p> <ul style="list-style-type: none"> Literacy – The importance of checking content accuracy and proof –reading own content and utilizing the tools provided through IT. The use of appropriate language and formatting in professional documents 		<ul style="list-style-type: none"> Numeracy – Algorithms, number systems and units of measure in Computer Science, and network protocols. Literacy – The importance of checking content accuracy and proof –reading own content and utilizing the tools provided through IT. The use of appropriate language and formatting in professional documents.
<p>Ensuring this curriculum meets the needs of all pupils: this curriculum has been designed to ensure pupils from all starting points will develop the key curriculum skills and knowledge identified. The curriculum design ensures that each unit forms part of the overall learning journey and there are opportunities for revisiting skills and linking together key pieces of knowledge. Whole Academy policies and practices are followed to tailor the delivery of the curriculum for individuals and groups of students. For example SEND students have individual learning profiles that outline needs/strategies to be used, Whole group RIPs are in place to identify key teaching strategies that will be used with individual teaching groups. Ongoing formative assessment and clear summative assessment points allow individual staff and departments to identify misconception and adjust curriculum appropriately.</p>					
<p>Enrichment opportunities:</p> <ul style="list-style-type: none"> Coding Club Visits/Trips 					
<p>Career opportunities/ links: Software development / systems engineer / support roles / network architecture / law / cyber-security / cloud-computing</p>					