

Computing, IT, Business and Economics Faculty
Curriculum Map for GCSE Computer Science

Year 10

Statement of Intent	<i>The objective in Year 10 is to give students the knowledge required for Paper 1 whilst also developing their programming skills for the programming on screen exam they will sit in Year 11. The Computer Science course is split into 6 units, in Year 10, students will develop in areas across all 6, but specifically: Computer systems, Data, Networks and Programming. This allows students to sit a mock in June for Paper 1.</i>
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Term 1	<p>Topic: Hardware Students will learn about the different computer hardware that helps make up a computer system. As part of the Computer Systems unit, hardware is an essential part of this where they will develop their understanding of the CPU, input, output and storage devices. Students learn the importance of memory, CPU registers and buses in the process of the fetch-decode-execute cycle. Finally, students learn about Boolean logic and its underlying importance in how computer systems work.</p> <p>Lessons:</p> <ul style="list-style-type: none"> • Computer systems • Input and output devices • Memory • Storage • The CPU • Boolean logic <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs.</p> <p>Assessment: The students will sit a definitions test on all of the critical hardware components and concepts they learn about it Term 1.</p>
Term 2	<p>Topic: Software Software is the next logical place to visit after consolidating hardware and is also what makes up the Computer Systems unit. Students will first learn about what software is before embarking on the most crucial of all software, the Operating System. Students will learn about the different functions the OS performs and how it is crucial in catering for the needs of the user of a computer system. Furthermore, students develop their understanding of many more types of software, including utility, application, simulation and modelling, whilst also learning about the difference between open and closed source software. The final type of software students discover is programming languages and their need for translators – this topic provides a great way to reflect back on how computer hardware works from Term 1.</p>

	<p>Lessons:</p> <ul style="list-style-type: none">• What is software?• Operating system• Utility software• Open vs Closed source software• Programming languages and translators <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs.</p> <p>Assessment: The students will sit an assessment using mock exam questions that encompasses all content from Software as well as some from Hardware.</p>
Term 3	<p>Topic: Data Representation</p> <p>Data representation is the understanding of how computers store, process and communicate information. Students will learn about different number systems whilst also learning about how computers perform arithmetic and represent negative numbers. Moving on from this, students develop and understanding of how computers represent text, images and sound. Students go on to learn about compression and encryption methods with finishing the term learning about databases.</p> <p>Lessons:</p> <ul style="list-style-type: none">• What is binary?• Hexadecimal• Signed numbers• Arithmetic• Images• Sound• Compression• Encryption• Databases <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs.</p>

	<p>Assessment: The students will sit an ItsLearning (School VLE) test, which will be comprised of a variety of types of questions such as multiple choice, fill in the blanks, match the word to the definition. Students will then be given their areas for development for this unit with additional questions to then use to show progress.</p>
<p>Term 4</p>	<p>Topic: Networks and Communications Across this term students will be learning about the purpose of networks, the types of network models, topologies, hardware and protocols. On top of this, students will learn about the internet and the world wide web. Finally, students will be learn about network security.</p> <p>Lessons:</p> <ul style="list-style-type: none"> • What is a network? • Network hardware and packet switching • Network topologies & models • Network protocols • The internet and World Wide Web • Network security <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs.</p> <p>Assessment: The students will sit an assessment using mock exam questions that encompasses all content from network questions.</p>
<p>Term 5</p>	<p>Topic: Problem Solving & Programming Students will be exploring the concept of algorithms. They will be learning important programming constructs, data types, input and output, searching and sorting algorithms as well as testing algorithms to see if they produce the correct result. Students should eventually be able to write algorithms for a given scenario.</p> <p>Lessons:</p> <ul style="list-style-type: none"> • Constructs, Pseudo code and flowcharts • Searching and sorting • Trace tables • Creating algorithms <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs.</p>

	<p>Assessment: Students will be given an algorithm booklet where they are given 10 scenarios and problems and are expected to write an algorithm for each.</p>
Term 6	<p>Topic: Python Programming Students will be developing their Python Programming skills that will tie in directly to their onscreen paper 2 exam.</p> <p>Lessons:</p> <ul style="list-style-type: none">• Input, storage, output• Selection• Iteration• Sub programs• File handling <p>Homework: Students will receive a fortnightly homework that includes past paper questions to support their understanding, exam question skill, whilst also providing opportunity for assessment. These are then assessed and progress can be made through HTIs and MACs. These will consist of topics that are about the previous topics.</p>