MOOR PARK HIGH SCHOOL: CURRICULUM

Key Stage 4 Long Term Planning

Year 10 SYLLABUS: Pearson/Edexcel GCSE Computer Science.

Year 10 INTENT: Students will deepen their understanding of algorithms, data representation, and computer systems while advancing their programming skills using Python. They will learn to read and write code from pseudocode and flowcharts, apply key programming constructs, and explore how computers process and store data in binary. Through practical tasks, students will develop problem-solving skills, understand hardware and software components, and prepare for assessments using real-world examples and exam-style questions. Regular homework and enrichment opportunities, such as coding clubs and industry workshops, will support their progress and engagement.

Curriculum Area: Arts, Performance and Technology (Computing)

Year 10	Autumn Term		Spring Term		Summer Term	
Syllabus	**Topic 1: Computational Thinking**	**Topic 6 – Programming**	**Topic 2 – Data Representation**	**Topic 6 – Programming**	**Topic 3 – Computer Systems**	**Topic 6 – Programming**
Knowledge	Pupils will learn about algorithms and how they are used in everyday life. They will understand how computers use algorithms to process any actions. They will also understand how to decompose a problem.	Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms	Pupils will be able to explain how binary is used and how data is represented in different formats by a computer. Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms.	Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms	Pupils will be able to explain the hardware and software required to make a computer functional. They also be able to explain different types of programming languages. Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms.	Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms
Skills	Students should understand how to break down and simplify problems using decomposition and abstraction, and how subprograms help structure solutions. They should be able to follow and write algorithms using key programming structures, data types, and operators, trace and debug logic, and apply standard	Students should be able to solve problems and write, read, and improve programs using a high-level language. They should convert algorithms into code, make programs readable, fix errors, and test for efficiency. They also need to understand key programming structures like variables, loops, and subprograms.	Students should understand how computers use binary to represent data and instructions, and how to convert between binary, denary, and hexadecimal. They should be able to perform binary arithmetic, apply shifts, and understand overflow. They also need to know how text, images, and sound are stored in binary, how to calculate file sizes, and the importance of compression methods like lossy and lossless.	Students should be able to write programs using sequencing, selection, repetition, and iteration, with clear entry and exit points. They should use appropriate data types, variables, and constants, manipulate strings, handle user input, and work with CSV files. Programs should include validation and authentication where needed.	Pupils will be able to explain the hardware and software required to make a computer functional. They also be able to explain different types of programming languages. Students will develop their programming knowledge as they look to move onto more advanced features of python and be able to create and read programs based on pseudocode and flowchart algorithms.	Students should be able to write programs using relational and logical operators and use both built-in and custom subprograms. They should understand how to create functions that return values and procedures that don't, with or without parameters. They also need to know when to use global or local variables appropriately.

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Connections to previous learning	In Key Stage Three, students are taught about the elements of computational thinking (abstraction and decomposition) and are also taught about searching and sorting algorithms alongside key programming elements as well.	In KS3, students will have been taught how to develop programs using Python in both year 8 and 9, in KS4 they will build upon this which is essential for their practical programming exam in year 11.	In Year 8, students will learn the fundamentals of data representation so they should be able to explain what binary is and be able to convert between binary and denary numbers and be able to perform calculations using them.	In KS3, students will have been taught how to develop programs using Python in both year 8 and 9, in KS4 they will build upon this which is essential for their practical programming exam in year 11.	In year 9 students will be introduced to the hardware and software of a computer which will allow them to carry their knowledge and understanding of how computers work through to KS4.	In KS3, students will have been taught how to develop programs using Python in both year 8 and 9, in KS4 they will build upon this which is essential for their practical programming exam in year 11.
Assessment	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to assess self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to assess self-assess knowledge. Common assessment points will take place at the end of each half term to assess the knowledge they have learnt over the half term.
Homework	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.
Culture Capital	KS4 Coding club will be available as an enrichment and to support students with their examination.	KS4 Coding club will be available as an enrichment and to support students with their examination.	KS4 Coding club will be available as an enrichment and to support students with their examination.	KS4 Coding club will be available as an enrichment and to support students with their examination.	KS4 Coding club will be available as an enrichment and to support students with their examination.	KS4 Coding club will be available as an enrichment and to support students with their examination.
Numeracy	Data Types, Searching and Sorting, Logic.	Numeracy skills in programming help students understand data types, perform calculations, use logic, and evaluate program efficiency—essential for writing accurate and effective code.	Students will be able to perform binary arithmetic, apply shifts, how to calculate file sizes, and number conversions	Numeracy skills in programming help students understand data types, perform calculations, use logic, and evaluate program efficiency—essential for writing accurate and effective code.	Numeracy skills include understanding how data is stored and processed by hardware, calculating clock speeds, storage capacities, and understanding the role of binary logic in system architecture.	Numeracy skills in programming help students understand data types, perform calculations, use logic, and evaluate program efficiency—essential for writing accurate and effective code.
Literacy	Key words will be	Key words will be displayed	Key words will be displayed	Key words will be displayed and	Key words will be displayed and	Key words will be displayed and

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	displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers. Students will be programming and must ensure all spellings and grammar are correct otherwise programs will not work.	and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers. Students will be programming and must ensure all spellings and grammar are correct otherwise programs will not work.	used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers. Students will be programming and must ensure all spellings and grammar are correct otherwise programs will not work.
CEIAG	During this term there will be a dedicated careers lesson where we will discuss all the possible career paths in Computer Science.		Discussions with an ICT specialist from an industry arranged through computing at school. Programming Workshop through our Industry Partnership (CyberFirst)		Mr. Fisher-Cooper and Mr. Leonard will teach students how to take apart and rebuild Computers.	

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Year 11 SYLLABUS

Year 11 INTENT: Students will deepen their understanding of computer networks and the societal impact of technology, while revisiting and consolidating key GCSE topics in preparation for final assessments. They will explore how networks are structured, compare wired and wireless systems, and evaluate network security and ethical considerations. Through structured revision, students will strengthen their knowledge of data representation, computer systems, and computational thinking, including programming techniques and problem-solving strategies. Regular assessments, homework, and enrichment opportunities such as coding clubs and guest workshops will support their progress, while literacy and exam technique will be embedded throughout to enhance written and analytical skills.

Curriculum Area: Arts, Performance and Technology (Computing

Year 10	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1
Syllabus	**Topic 4: Networking**	**Topic 5: Issues and Impact**	**Revision – Topics 2 and 3**	**Revision Topics 4 and 5**	**Revision – Paper 2 / Topic 1**
Knowledge	Pupils will understand how networks are created and analyse the different types. They will be able to comprehensively explain the differences between wired and wireless connections. They will also be able to explain issues surrounding the security of networks and how they are kept safe.	Pupils will be able to understand the impact of technology on society. They will also be able to explain the legal impact when using technology.	Revisiting of key GCSE units in order to consider identified gaps and other areas for development. Students will focus on Data and Computer Systems within this half term.	Revisiting of key GCSE units in order to consider identified gaps and other areas for development. Students will focus on Networking and Issues and Impact	Revisiting of key GCSE units in order to consider identified gaps and other areas for development. Students will focus on Computational Thinking and Programming
Skills	Pupils will be able to form different network topologies. They will be able to recommend a type of network in each scenario. They will recognize the different components on the internet. Pupils will develop their exam answering technique in preparation for 6-mark questions.	Pupils will be able to recommend how to become more energy efficient when using a computer. They will also be able to explain the ethical, moral and legal issues on society. Pupils will develop their exam answering technique in preparation for 6-mark questions.	Students will recap: 1. Binary representation 2. Two complements 3. Binary additions 4. Overflows 5. Hexadecimal conversion 6. ASCII 7. Bitmap images 8. Binary as sound 9. Data Storage 10. Von Neumann cycle 11. Address bus, data bus and control bus functions 12. Embedded systems 13. Operating systems 14. Scheduling algorithms 15. Utility software 16. High level and low-level programming 17. Code reviews and audit trails	Students will recap: 1. Network 2. LAN/WAN 3. IP Address/Routers 4. Wired and Wireless Networks 5. Network speeds 6. Protocols 7. TCP/IP model 8. Network Topologies 9. Network security and Network vulnerabilities 10. Energy consumption/manufacturing 11. Replacement cycle 12. Disposal 13. Personal data 14. A.I./Machine learning 15. Robotics 16. Intellectual property 17. Treats to digital systems 18. Methods of protecting digital	Students will recap: 1. Abstraction and decomposition 2. Subroutines 3. Flowcharts 4. Variables and Constant 5. Arithmetic Operators 6. Trace Tables 7. Syntax, Logical and runtime errors 8. Sort and searches 9. Logical gates 10. Decomposition 11. Abstraction 12. Refining programs 13. Convert algorithms 14. Programming techniques 15. Programming errors 16. Logical reasoning

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			18. Translators	systems	
Connections to previous learning	Students will build on the knowledge on networks taken from the KS3 unit in year 9. They will also continue working on problem solving and programming which they will learn continuously throughout KS4.	Students will have some prior knowledge of the impact and issues of technology; this will be briefly covered in Y7 e-safety and Y9 computers. Students may also hear about the impact of technology in the news. They will also continue working on problem solving and programming which they will learn continuously throughout KS4.	Students will have prior knowledge to these topics as these are recap and revision lessons, with the PLC checklists being used to assess self-assess knowledge	Students will have prior knowledge to these topics as these are recap and revision lessons, with the PLC checklists being used to assess self-assess knowledge	Students will have prior knowledge to these topics as these are recap and revision lessons, with the PLC checklists being used to assess self-assess knowledge
Assessment	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to self-assess knowledge. The assessment will be based on a random selection of previous topics.	Pupils will be required to complete an assessment based on the previous unit and prior knowledge using exam styles questions. PLC checklists will be used to assess self-assess knowledge. The assessment will be based on a random selection of previous topics.	Past Paper Exam Questions and timed assessment practice will be completed. PLC checklists will be used to assess self-assess knowledge	Past Paper Exam Questions and timed assessment practice will be completed. PLC checklists will be used to assess self-assess knowledge	Past Paper Exam Questions and timed assessment practice will be completed. PLC checklists will be used to assess self-assess knowledge
Homework	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Homework will be issued each week. This will build and extend learning in this topic. Homework will consist of a mixture of past paper questions, online programming tasks, independent research, flipped learning and GCSE POD.	Y11 revision plan produced. Students should complete the weekly tasks in the plan. This will include PPQs, GCSE Pod activities, MCQs etc.	Y11 revision plan produced. Students should complete the weekly tasks in the plan. This will include PPQs, GCSE Pod activities, MCQs etc.	Y11 revision plan produced. Students should complete the weekly tasks in the plan. This will include PPQs, GCSE Pod activities, MCQs etc.
Culture Capital	Coding club will be available as an enrichment	A CAS specialist will be invited in to share his expertise in coding.	Coding club will be available as an enrichment	Coding club will be available as an enrichment	Coding club will be available as an enrichment
Numeracy	Computing is very logical and requires various techniques using operators and mathematical concepts.	Computing is very logical and requires various techniques using operators and mathematical concepts.	Computing is very logical and requires various techniques using operators and mathematical concepts.	Computing is very logical and requires various techniques using operators and mathematical concepts.	Computing is very logical and requires various techniques using operators and mathematical concepts.
Literacy	Key words will be displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	Key words will be displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	Key words will be displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	Key words will be displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.	Key words will be displayed and used throughout the lessons. Students will focus on their literacy skills when completing written work on the computers.
CEIAG	Talk from ACO regards the school virtual servers.		Business case study on how businesses have dealt with cyber security issues.		

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