Space Studio West London
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Computer Science - Curriculum Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10 curriculum overview	Unit 1.1	Unit 2.1 , 2.2, Python	Unit 2.3, Python Programming	Unit 2.5, Python Programming	Unit 2.4, Python Programming	Unit 1.6, Python Programming
Key knowledge outcomes (students should know)	**System Architecture** ● The purpose of the CPU ● Common CPU components and their functions ● Von Newmann architecture ● CPU performance ● Embedded systems	**Algorithms** ● Computational thinking ● Designing creating and refining algorithms ● Searching and sorting algorithms Programming fundamentals ● Programming fundamentals ● Data types ● Additional programming techniques	**Producing robust programs** ● Defensive design ● Testing	**Programming languages and IDE** ● Languages ● The Integrated Development Environment (IDE)	**Boolean Logic**	**Ethical , legal, cultural and environmental impacts of digital technology** ● Legislations relevant to Computer Science
Key skills (students should be able to)	Understand the purpose of the components, actions during F-D-E	Principles of computational thinking,producing flow diagrams, writing	Understanding the issues a programmer should	Understanding the difference between high level and low level	Recognising Logic gates, creating logic gates and	Understand the issues around using technology

	cycle, Familiarity with a range of embedded systems Understanding how every component is important in the effective functioning of the computer	pseudocode,practical use of programming techniques using high-level language (Python) Create a program using decomposition, abstraction and algorithmic thinking, debugging.	consider. Understanding the importance of authentication and testing. Identifying errors and solving them.Foresightful during the designing and development process.	languages. Understanding the difference between Interpreter and Compiler. Understanding the difference between interpreter and compiler using real life scenarios.	truth tables Understanding that there would be different possibilities of outputs depending on the different inputs .	and explain the purpose of legislations relevant to Computer Science Ability to discuss the impact of technology based on the issues listed. Identify and recommend a type of licence for a given scenario.
Year 11 curriculum overview	Unit 3.1, 3.2 (revision) Unit 3.5	3.5	Unit 3.6, 3.8	3.7	Revision	Exams
Key knowledge outcomes (students should know)	Algorithms and Programming Basics (Revision) ● Identify/ describe/explain key terms ● Create short algorithms ● Understand what makes an algorithm efficient ● Use functions and procedures	Computer Networks (continued from last half term) ● Discuss the benefits and drawbacks of using networks ● Identify types of networks, hardware needed and measures that can be taken to	Cyber Security and Impacts of Technology ● Define the term cyber security ● Explain the different cyber security threats ● Discuss how companies	Databases ● Define terms related to relational databases ● Use SQL statements to update, delete and edit data ● Use one and two table queries		

	• Use one and two dimensional arrays • Identify and correct errors • Use trace tables Computer Networks (Introduction) • Identify different types of networks and topologies • Define the benefits and risks of using networks • Discuss the types of networks, hardware needed and measures that can be taken to secure networks	secure networks • Explain how messages are sent across the Internet • Describe network protocols • Explain methods of security • Know the 4 layers of TCP/IP model	and individuals can protect themselves • Explain the ethical impacts of digital technology on society, the environment and wider society			
Key skills (students should be able to)	Flowcharts, pseudocode and Python, trace tables PowerSkills: Critical Thinking, Problem solving, Collaboration	Diagrams and drawings PowerSkills: Critical Thinking and problem solving	Evaluate the impact of technology PowerSkills: Critical Thinking and problem solving; Communication skills	SQL language PowerSkills: Critical Thinking and problem solving	Exam techniques Power Skills: Learning to learn, resilience, perseverance, time management	Exam techniques Power Skills: Learning to learn, resilience, perseverance, time management

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Year 12 curriculum overview	Unit 1.1	Unit 1.1	Unit 1.2	Unit 1.3	Unit 1.4	Unit 2.3
Key knowledge outcomes (students should know)	● The characteristics of contemporary processors, input, output and storage devices	The characteristics of contemporary processors, input, output and storage devices	Software and software development	Exchanging data	Data types, data structures and algorithms	Algorithms
Key skills (students should be able to)	Understand the purpose of the components, actions during F-D-E cycle, Familiarity with a range of embedded systems Understanding the minute concepts of computing and how it can be applied to the wider world in every aspects of Life.	Understand the purpose of the components, actions during F-D-E cycle, Familiarity with a range of embedded systems Understanding the minute concepts of computing and how it can be applied to the wider world in every aspect of life.	Identifying the different types of software and the different methodologies used to develop software Understanding the importance of planning and refining the planning by applying it to their own lives.	Understanding how data is exchanged between different systems Communication	Understanding how data is represented and stored within different structures.How different algorithms can be applied to these structures Structuring and organising	Understand what is meant by computational Thinking. Use of algorithms to solve a problem
Year 13 curriculum overview	Unit 1.3	Unit 1.4 (CLL)	Unit 3.1	Unit 3.2	Unit 3.3 & 3.4	EXAM

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	Exchanging data	Data types, data structures and algorithms	Analysis of the problem	Design of the solution	Developing the solution & Evalution	
Key knowledge outcomes (students should know)	Understanding Data Ongoing Python challenges in preparation for the NEA	Understanding the different data structures: stacks, queues, linked lists, trees, binary trees etc. Ongoing Python challenges in preparation for the NEA	Describe the features that make the problem solvable by computational methods. Identity stakeholders in any given scenario **NEA**	Able to break down a problem into smaller parts to make it easy to solve. **NEA**	Designing a solution to a problem. Testing and evaluating own work **NEA**	
Key skills (students should be able to)	Understanding how data is exchanged between different systems	Understanding how data is represented and stored within different structures.How different algorithms can be applied to these structures	Problem identification	Decompose the problem	Develop & test the solution	