Computer Science – Year 10

Chesterton Community Sports College

Subject: **Computer Science**
Year: **10**

	What?	Why?	National Curriculum Links
Term 1-1	**1.4: Systems Security** Identify threats to computers and solutions to protect them.	Topic for Paper 1. Initial exposure in lesson as pupils already have contextual knowledge at this stage. Pupils should be able to describe hackers, viruses and anti-virus software to engage.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology
	Independent Programming Challenges Building experience with incremental Python projects and challenges	Y9 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of larger projects that combine skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 1-2	**1.5: Systems Software** The main functions of the operating system.	Builds upon Y7 topic of How Computers Work and contextual knowledge from general computer use. Pupils must be able to define system software. Paper 1 Topic.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology
	Independent Programming Challenges Building experience with incremental Python projects and challenges	Y9 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of larger projects that combine skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 2-1	**1.6: Ethical, Legal, Cultural and Environmental Issues** Explain and justify how the use of technology impacts on society, from the perspective of social, economical, political legal, ethical and moral issues.	Builds upon prior ethical topics to ensure that pupils can write a balanced and justified answer to questions on these issues. Paper 1 topic.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology
	Independent Programming Challenges Building experience with incremental Python projects and challenges	Y9 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of larger projects that combine skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 2-2	**2.1: Computational Thinking and Search/Sort Algorithms** Different algorithms exist for the same problem.	Introduction to pre-created algorithms that are used in Paper 2. Step by step algorithms to search for a number and sort a list of numbers. Pupils need to be able to read flowcharts (Y7) and carry out a step by step solution to a problem.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology **4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
	Independent Programming Challenges Building experience with incremental Python projects and challenges	Y9 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of larger projects that combine skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills

Term 3-1	**2.1: Design, Refine, Test and Write Algorithms** Evaluate the effectiveness of algorithms and models for similar problems.	Builds upon Search/Sort Algorithms and Y9 Python. Key skill to be able to interpret algorithms on paper and evaluation/comparison skills to justify which is best in a scenario. Prerequisite to Paper 2 Exam Revision Unit.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology **4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
	Independent Programming Challenges Building experience with incremental Python projects and challenges	Y9 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of larger projects that combine skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 3-3	**2.2: Programming Fundamentals** Programs run by following precise instructions.	Y9 Python programming skills a prerequisite. Fundamental programming skill to design algorithms as step-by-step instructions. Teaches foundational skills in programming such as debugging and use of the program for Paper 2 of GCSE. Theory based consolidation of all programming experience to this point and how to answer written questions on the topics.	**4.1:** develop their capability, creativity and knowledge in computer science, digital media and information technology **4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills
	Text Adventure Game Project Consolidating experience with a larger Python project	Y9 and Y10 lays foundation, spiral structure of course covers prior concepts extended this time to use subroutines and modular programming as part of an even larger project that combines all skills.	**4.2:** develop and apply their analytic, problem-solving, design, and computational thinking skills