Yardleys Curriculum Aims

- To achieve academic excellence
- To educate the 'whole child' so they are ready for life
- To work collaboratively and ethically to provide education of the highest standard

COMPUTING – KEY STAGE 3

Curriculum Overview			
INTENT: Through our ambitious computing curriculum our learners will have access to a broad and balanced range of topics including digital literacy, computational thinking and modern technology. Yardley's computing curriculum will provide students with an understanding of how computing underpins today's modern lifestyle and has made the world better, faster and more connected. We ensure that the students at Yardleys can develop to become masters and creators in this field, to aid them in their development of our rapidly changing technological world.			
Year 7			
Students begin their learning journey in Year 7 to become confident and capable digital citizens by studying a range of units that help them understand key aspects of technology and how it shapes the world around us. The journey begins by laying the foundations for all things computing, from understanding hardware and software, mastering file management to exploring essential word processor and spreadsheet skills. We then move to networks and how the Internet works. Through Scratch students develop their problem solving and logical thinking skills while understanding key programming concepts. Finally, students will explore how spreadsheets can help model and solve real-world problems.			
	1. Computing essentials (Software skills & Impact of technology)	**1.Networks 2.Scratch P.1**	**1. Programming essentials in Scratch P.2 2. Modelling data**
SUBSTANTIVE KNOWLEDGE	• Secure passwords • File management • Hardware/ Software • Software • Emails • CPU	• Networks/connectivity • Internet • Protocols • Programming within Scratch • Predict, run, investigate and modify a scratch program • Selection statements • Introduction to iteration	• Programming within Scratch • Sequencing · Variables · Selection · Operators Count-controlled iteration Modify a sequence • Define variables • Cell references, Formatting and Functions • Sorting and filtering • Charts

DISCIPLINARY KNOWLEDGE	• Setting up a password • Understanding the importance of file management • Identify appropriate software for a given purpose/communicate	• Compare networks • Use of Programming language • Understanding of sequencing • Using variables • Prediction of outcomes • Application of comparison operators • Debugging	• Use of Programming language • Rearranging code • Understanding of algorithms • Design and apply programming constructs • Application of comparison operators • Role of Iteration • Understand why spreadsheets are useful • Navigate spreadsheets • Performing calculations • Analyse data

Year 8

In Year 8 students take a step deeper into the fascinating world of technology and computing, students will be challenged to think logically, solve problems and create their own digital projects. Networks build upon the Year 7 unit and explore more complex systems that connect the digital world. Computational thinking is at the heart of everything computing, this unit will demonstrate how to break down complex problems, this leads onto how data is stored using binary. Developmental platforms and tools are used to create websites and apps and finally Python, one of the most powerful and widely used programming languages is introduced.

	1. Networks 2. Computational thinking	**1. Representations 2. Developing for the web**	**1. App development 2. Introduction to Python**
SUBSTANTIVE KNOWLEDGE	• Hardware/Architecture • Networks/connectivity • Internet • Protocols • Logic gates • Algorithms • Machine learning/Artificial Intelligence	• Images • Binary • Units • HTML/tags • CSS	• Use of binary selection • Awareness of syntax errors • Block based programming language • Decomposition • Variables • Sequencing and selection
DISCIPLINARY KNOWLEDGE	• Explain the difference between a general-purpose computing system and a purpose-built device • How logical operators are used to form logical expressions • Understand how instructions are stored • Create and refine algorithms, • Compare networks	• Conversions – decimal to binary/vice versa • Convert between different units • Use, modify, apply HTML • Use CSS • Use search technology • Create hyperlinks	• Use of Programming language • Use simple arithmetic expressions in assignment statements to calculate values • Use sequencing and selection • Understanding of Integers • Role of Iteration

Year 9

Year 9 is about taking everything we have learned in previous years and applying it to real world challenges. Advanced programming skills will be gained, and the growing fields of AI and Data Science will be explored. A key thread throughout KS3 is understanding how to use technology responsibly, in an increasingly connected world, cybersecurity is more important than ever, with threats such as malware, phishing and social engineering on the increase.

Whether students aspire to be data scientists, cybersecurity experts, AI developers or creative technologists, the computing curriculum will prepare students for the opportunities and challenges of the digital age.

	1. Programming **2. Data Science**	**1. AI** **2. Representations**	**1. Media animations** **2. Cybersecurity**
SUBSTANTIVE KNOWLEDGE	• Awareness of syntax errors • Block based programming language • Decomposition • Variables • Sequencing and selection • Data • Correlation • Outliers • Patterns • Trends	• Generative AI • Bias • Input • Output • Translation • Deep learning • ASCII • Pixels • Binary digits • Sound waves • Sampling	• Scale • 3D • Rotate • Online dangers • How to stay safe online • Phishing • Malware • Catfish • Cyberbullying • Trolls
DISCIPLINARY KNOWLEDGE	• Use of Programming language • Use simple arithmetic expressions in assignment statements to calculate values • Sequencing and selection • Understanding of Integers • Role of Iteration • Explain how visualising data can help us to identify patterns and trends in order to gain insights • Use an appropriate software tool to visualise data sets and look for patterns or trends	• How to identify bias • The implications of AI • Understand the different character sets • Calculate image size	• Use Blender • Add, delete, and move objects • Scale and rotate objects • Use a material to add colour to objects • Explain the potential dangers on the internet (e.g. cyber bullying, hacking). Understand the steps to make a strong password • Use knowledge to be able to spot a phishing attempt • Analyse the dangers and implications of using social media