Curriculum Plans: Year 8 (Computer Science)

	Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Term 1	Introduction to AI	• The difference between data-driven and rule-based approaches. • Various AI applications, such as generative AI and computer vision. • Machine learning and its relationship to AI, including the three types of learning (supervised, etc.). • How data impacts AI, including concepts of bias and accuracy. • The AI project lifecycle, including defining the problem, preparing data, training, and testing models. • How bias affects machine learning models and the importance of test and training data. • The concept and importance of model cards for evaluating AI models. • AI-related career paths, including areas of development, ethical considerations, and model implementation.	• Ability to differentiate between AI and non-AI applications. • Skills in using online AI tools to generate artwork and classify images. • Using machine learning tools to classify data, create decision trees, and train models. • Critical thinking about AI benefits, limitations, and biases in models. • Analysing and improving AI models by testing and refining data sets. • Recognising ethical implications of AI, such as data bias and its effects on predictions. • Understanding how to interpret and explain AI models' accuracy and limitations. • Collaboration in group discussions to evaluate	• Artificial Intelligence • Machine Learning • Computer Vision • Generative AI • Supervised Learning • Classification • Bias • Decision Trees	**Online Assessment –** MS Forms Multiple Choice Test

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			AI technologies and create machine learning models.		
Term 1	Python	• Basic Python syntax (print, input, variable declaration). • Data types and variables in Python. • Arithmetic operations and calculations in Python. • Using conditionals (if, elif, else) to control program flow. • Loops (while, for) for iteration in Python. • How to structure basic programs with input, logic, and output. • Writing user-interactive programs (e.g., asking for user input, displaying results). • Creating interactive programs that respond to user inputs with dynamic output.	• Writing Python programs with input/output functions. • Debugging common errors in Python code (e.g., missing quotes, incorrect use of operators). • Using arithmetic operators for calculations. • Implementing if statements, conditionals, and loops to solve programming tasks. • Creating loops to automate repeated tasks. • Solving problems such as calculating averages, processing lists, and generating repetitive outputs. • Testing and troubleshooting programs using print statements and logical reasoning.	• Syntax • Variables • Data types • Operators • Input/Output • Conditionals (If, Elif, Else) • Loops (while, for) • Functions (input, print)	**Online Assessment –** MS Forms Multiple Choice Questions **Practical Task –** Programming Test

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			• Structuring code with proper use of data types, loops, and conditional statements.		
Term 2	E-Safety	• The pros and cons of smartphone use and its effects on user behavior. • How to differentiate between real and fake news, and the impact of fake news on society. • Understanding cyberbullying, its forms, and its consequences. • The dangers of online grooming and how to identify potential grooming signs. • Methods for staying safe on social media and how to evaluate the safety of social media profiles.	• Analysing the advantages and disadvantages of smartphone use. • Identifying fake news by comparing sources and checking for consistency in reporting. • Creating visuals, metaphors, and definitions related to cyberbullying and promoting positive online behavior. • Creating educational resources (e.g., posters, leaflets) to raise awareness about online safety and grooming. • Producing videos and rejection letters related to online safety on social media platforms.	• Fake news • Cyberbullying • Online grooming • Social media safety	N/A
Term 2	Spreadsheets	• Understanding what a spreadsheet is and how it is used.	• Using basic formulae and functions like SUM, MIN, MAX, and AVERAGE in Excel.	• Spreadsheet • Formula • Cell • Rown	

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		• Identifying key elements of a spreadsheet (e.g., cell, row, column, formula). • How to format spreadsheets effectively for readability and professionalism. • Understanding and using built-in functions (e.g., MIN, MAX, AVERAGE) in Excel. • How to create and interpret different types of charts and graphs in spreadsheets. • Conditional formatting and its use in highlighting specific data patterns.	• Formatting spreadsheets for clarity using borders, shading, alignment, and fonts. • Creating charts to visually represent data. • Implementing IF statements to automate logical decisions in spreadsheets. • Applying conditional formatting to enhance readability of data. • Designing and building spreadsheets for specific purposes (e.g., league tables, budgeting).	• Column • Function • SUM • MIN • MAX • AVERAGE • IF statement • Conditional Formatting	
Term 3	Ethics and Legal	• Ethical and cultural issues related to computer science technologies. • The role of robots and automation in society. • Understanding different types of malware (e.g., viruses, Trojans) and how to protect against them. • Various types of hackers and their motivations (e.g., white hat, black hat). • How privacy and tracking tools work, and their strengths and weaknesses.	• Evaluating the pros and cons of technologies like driverless cars, considering ethical and cultural impacts. • Creating presentations and leaflets to communicate complex ideas about malware and computer ethics. • Researching and summarising different types of malware, hackers, and privacy tools.	• Ethical issues • Driverless cars • Malware • Hackers • Privacy • - Tracking	**Written Assessment -** Written Exam Will be assessed as part of the end of year exam

		• The impact of computers on industries and society.	• Applying critical thinking to evaluate privacy tools for online anonymity and tracking prevention. • Conducting research into tools like VPNs and anonymous browsing to protect privacy. • Researching the pros and cons of using computers in specific industries (e.g., education, business).		