

KS3 Curriculum Overview: Computer Science

| | Year 7 | Year 8 | Year 9 |
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| Autumn | Autumn Term 1.1 Digital Literacy: Using Office 365 | Autumn Term 1.1 Computer Science: Cyber Security | Autumn Term 1.1 Computer Science: Cyber Security |
| Autumn Term | Year 7 Autumn Term 1.1 Digital Literacy: Using Office 365 • Using Office applications • creating folders and files on Microsoft Office. • Learning about OneDrive • Learn how to use OneNote in Computer Science • Learn about the homework platforms • What makes a good PowerPoint • Learn how to insert pictures, text, change layout and fonts • Create a PowerPoint Presentation on the topic 'about me' Autumn Term 1.2 Computer Science: Cyber Security • Creating secure passwords • Identity theft • Types of malware • How to prevent malware attacks VIRTUES AND GOLDEN THREADS: Courage and Collaboration Working with others to create a presentation. To support one another in a new environment. Many would need support in navigating around a desktop computer. Working independently as a | Year 8 Autumn Term 1.1 Computer Science: Cyber Security Recap - Creating secure passwords Types of Hacking Protecting against hacking (Firewalls and Antimalware) The Computer Misuse Act Encryption Creating a Caesar Cipher wheel The dangers of public wi-fi Autumn Term 1.2 Digital Literacy: able to confidently use application software/ Use of hardware terms Hardware- storage devices, CPU, RAM/ROM Assessment- written on hardware- recall knowledge and application VIRTUES AND GOLDEN THREADS: Justice and Forgiveness How to protect our personal data and information on the internet. Understanding the concept of protection software to keep data secure. Understanding the | Year 9 Autumn Term 1.1 Computer Science: Cyber Security Explanation of cyber-crime and its relevance in today's digital world. Discussion of how cyber-crimes can affect individuals, businesses, and society. Identity Theft: Overview of how personal information is stolen and misused. Hacking: Discussion of unauthorized access to systems and data breaches. Definition of malware and its purpose How can we protect ourselves from malware attacks? Autumn Term 1.2 Computer Science: Data Representation Learn about binary and understand how computers use it How to represent a number using binary How to add two and three binary numbers Learn how to complete binary shifts to the left and to the right Learn how to convert denary to hexadecimal and hexadecimal to denary Learn how to convert binary to hexadecimal and hexadecimal to binary. |
| | computer scientist. | important of forgiveness and justice for those who commit cyber-crimes. | Nexadecimal to binary. VIRTUES AND GOLDEN THREADS: Love and Peace How to protect our personal data and information on the internet. Understanding the concept of protection software to keep data secure. |



| Spring | Spring Term IT: use of Excel | Spring Term Computer Science: Algorithms | Spring Term Computer Science: Algorithms |
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| Term | | | |
| | Data collection | Flowcharts | Flowcharts And Pseudocode |
| | Creating Spreadsheets | | |
| | Making Tables | Producing algorithms for real life problems | Producing algorithms for real life problems |
| | • Learning what a column and cell are and what | Students will learn the different shapes for | Students will learn why pseudocode is |
| | a cell reference is. | producing flowcharts | useful in programming |
| | Using functions and formulae including SUM, | • They will learn the purpose of each shape in | They will learn the conventions involved in |
| | AVERAGE, MIN, MAX. | representing steps in an algorithm | writing pseudocode |
| | Learning how to format excel spreadsheets | They will learn step by step how to create a | Students will learn how to write real life |
| | Creating Graphs | flowchart for a simple rea-life task or | algorithms using pseudocode |
| | | problem. | • code and flowcharts. |
| | VIRTUES AND GOLDEN THREADS: | Introduction to Flowbe software Draducing flowbarts using flowba software | Students will work on projects on flowbe activities |
| | | Producing nowcharts using Flowbe software | software |
| | Humility and Helpfulness | | |
| | Students are taught that making mistakes is part | VINTOLS AND GOLDEN THREADS. | |
| | of learning. They are encouraged to share errors | Creativity and Integrity | VINTOLS AND GOLDEN TIMEADS. |
| | they encounter in Excel and how they can | We will discuss the importance of integrity due to | Creativity and Integrity |
| | improve reinforcing that everyone is learning | the ethical implications of algorithms being used | We will discuss the importance of integrity due to |
| | together. | in real world examples such as fairness and bias. | the ethical implications of algorithms being used |
| | | | in real world examples such as fairness and bias. |
| | Students are encouraged to help one another by | We will encourage a creative approach to | |
| | sharing their mistakes and wins. | problem solving emphasising that there is not just | |
| | | one correct way to solve a problem but that using | |
| | | creativity can help us to find new and innovative | |
| | | ways to create algorithms for real life problems | |
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| Summer | | | |
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| Term | Summer term Computer Science: Python Turtle | Summer Term Computer Science: Python Programming | Summer Term Computer Science: Python Programming |
| | Students will learn what an algorithm is and what sequencing is and why this is important. They will be introduced to python through Python Turtle. They will write an algorithm for a simple task (unplugged) They will learn how to program python to draw basic shapes. They will learn how to calculate angles of shapes. They will be able to create a 4 loop in python. | Recap – what is an algorithm, what is a sequence? Learn the basic print function Learn what a Syntax and Logic error is and how to debug Variables – what are they and how do we name them? Students will complete several programs and fix programs using the PRIMM model of predict, run, investigate, model and make. Students will learn some basic programming constructs including sequencing, selection | We will recap the key programming concepts of sequencing, iteration and selection. We will discuss what they will be used for and learn how to apply them in a Python Program We will discuss naming variables and recap how to use them in a program We will recap the following: how to use if, else and elif, how to save user responses as variables. How to define a function and how to program a for loop. Students will learn and program while loops |
| | Determination and Resilience | and iteration. They will learn how to use if, else and elif They will learn how to save user responses as | Students will work on a real life programming solutions to real life problems. |
| | Learning a new language like Python can feel | variables. | VIRTUES AND GOLDEN THREADS: |
| | overwhelming at first. Students will be reminded that resilience will help them overcome initial confusion or frustration, and their determination | They will learn how to define a functionThey will learn how to program a for loop. | Patience and resilience Debugging and Problem-Solving: |
| | will push them to understand new concepts and build their skills. | VIRTUES AND GOLDEN THREADS: Determination and Resilience | Programming involves frequent mistakes and bugs. Encourage students to see errors as opportunities to learn. Explain that resilience |
| | | Learning a new language like Python can feel overwhelming at first. Students will be reminded that resilience will help them overcome initial | helps them persist through the challenges of debugging their code until they find a solution |
| | | contusion or trustration, and their determination will push them to understand new concepts and build their skills. | |