KS3 Computer Science

	Content
Year 7 HT 1	**Collaborating Online Respectfully:** Students will learn how to use school equipment safely and effectively. Students will gain skills in the use of both cloud based and desktop based software for wordprocessing, presentation and the safe use of e-mail. Knowledge content will include online relationships, online bullying and privacy and security.
Year 7 HT 2	**Networks:** This unit progresses students' knowledge and understanding of networks and associated hardware. The unit will establish a foundation understanding of how data is transmitted across networks, as well as exploring the factors that can affect performance. The unit will spend time focussing on the internet and services provided over the internet.
Year 7 HT 3	**Algorithms:** Understanding algorithms is central to computer science. We use them to help us to solve problems, to describe processes, and to describe the steps necessary to achieve a goal. These lessons help students to recognise and understand the fundamental building blocks of algorithms: sequencing, selection and iteration, and understand how use abstraction, decomposition and other computational thinking techniques. They will learn to create flowcharts and to break problems down into relevant steps in the correct order; skills that can be transferred to almost any field.
Year 7 HT 4	**Human Computer Interaction:** HCI (human-computer interaction) is the study of how people interact with computers. Lots of different professional people study this area including computer scientists, engineers, psychologists and graphics designers. In this unit students will study how information is presented to audiences, through colour and layout of control objects as well as content layout. SOme lessons will also focus on applying this knowledge to creating a prototype
Year 7 HT 5	**Introduction to Programming:** The aim of this unit and the following unit ('programming 2') is to build learners' confidence and knowledge of the key programming constructs. Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration. All of the examples and activities for this unit use Sprite Lab
Year 7 HT 6	**Computer Crime:** This unit covers some of the legal safeguards regarding computer use, including overviews of the Computer Misuse Act, Data Protection Act and GDPR and Copyright Law and their implications for computer use. Phishing scams and other email frauds, hacking, "data harvesting" identity theft and safe use of social media are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed.
Year 8 HT 1	**Computing Systems:** This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs, to the fundamental binary building blocks that these components consist of. The aim is to provide a concise overview of how computing systems operate, conveying the essentials and abstracting away the technical details that might confuse or put off learners.
Year 8 HT 2	**Programming with Python:** This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.
Year 8 HT 3	**Mobile App Development:** In a world where there's an app for every possible need, this unit aims to take the learners from designer to project manager to developer in order to create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Learners will work in pairs to consider the needs of the user; decompose the project into smaller, more manageable parts; use the pair programming approach to develop their app together; and finish off by evaluating the success of the project against the needs of the user.
Year 8 HT 4	

KS3 Computer Science

	Content
Year 8 HT 5	**Cybersecurity:** This unit takes the learners on an eye-opening journey of discovery about techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks. The learners will start by considering the value of their data to organisations and what they might use it for. They will then look at social engineering techniques used by cybercriminals to try to trick users into giving away their personal data. The unit will look at the more common cybercrimes such as hacking, DDoS attacks, and malware, as well as looking at methods to protect ourselves and our networks against these attacks.
Year 8 HT 6	**Representations:** Humans use symbols to record, process and transmit information. This unit Introduces binary digits to the students as the symbols computers use to perform these tasks and focus on the representation of text and numbers.
Year 9 HT 1 Year 9 HT 2	**IT Magazine:** During this term we will be creating IT magazines. This unit will introduce the concepts behind branding and product life cycles and involve some graphical design work. The main focus will be a series of articles that will allow students to explore aspects of computer science such as the construction and operation of hardware devices, primarily desktop computers.
Year 9 HT 3	**Spreadsheets:** In this unit students will discover how data is collected and used to support decision-making and how it can be presented in ways that make it easy to understand. The presentation and manipulation of data will be done using spreadsheet software. The goal will be to learn all of the skills needed to create a detailed Dashboard that summarises a given
Year 9 HT 4	**Programming with Python:** This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.
Year 9 HT 5	**Website Design:** In this half term students will take a practical look at designing websites. In this case they will develop a website for a school department of their choosing. As part of this they will develop a mood board, consider what content could be added to the site and develop a website structure using Google sites
Year 9 HT 6	**Intermediate Programming:** Students will learn how to develop programs following the systems development life cycle. There will be an emphasis on problem solving skills and how to get the most out of computational thinking techniques. There will be a secondary goal of becoming proficient in testing techniques.