Curriculum Overview for Information Technology and Computing - Year 9 Computer Science				
When?	**What?**	**Why?**	**How?**	**Support**
Autumn Half Term - 1	**9.1 Computational Thinking**	Often programming is thought of as an unnecessary skill except for those going into the industry however the skills students learn include: ● *Problem Solving* ● *Abstraction* ● *Pattern Recognition* ● *Decomposition*	In IT & Computing having Problem Solving skills is essential. These skills allow students to be able to break problems down into smaller more manageable parts, recognising ways of making tasks more efficient by using patterns, being able to prioritise the most important task and focus the attention of the more important elements are that particular moment. All these skills are not just essential for IT & Computing but everyday life - in and out of the workplace.	In each of the boxes below there are different strategies for you to help support students that relate to ***all learning in school.*** Each strategy related to the schools '*5 Ps approach',* we have also added a very important strategy in IT & Computing to the list: Perseverance. ***Strategy One: Prepare*** - Preparing for lesson is very important, students should make sure they have completed all homework before the lesson. This should be posted on Show my Homework for students and parents to view at any time. Students can also prepare for the lessons by making sure they are comfortable for the content from previous lessons. Key knowledge sheets can be found on the 'About' tab of Google Classroom.
Autumn Half Term - 2	**9.2 Programming**	Often programming is thought of as an unnecessary skill except for those going into the industry however the skills students learn include: ● *Perseverance* ● *Problem Solving* ● *Error Checking* ● *Adaptation* ● *Experimentation* ● *Creativity* ● *Decomposition* *...and many more.*	Pupils are given a chance to work at their own pace through a programming project. This will be moving on from programming students would have completed in Year 8 to advance their skills. Most students will be using Python text based language to make their code. They will learn programming principles such as: ● *Sequencing* ● *Variables* ● *Conditional Statements* ● *Loops* ● *Lists/Arrays*	Programming units can be practiced at home on a variety of different online platforms. These include: ● scratch.mit.edu (revisit Yr7 learning) ● pythonschool.net ● learnpython.org ● codeacademy.com ***Strategy Two: Perseverance*** - This skills is something that students often lack the confidence to pursue. In computing things often go wrong and the best programmers are never those who do things correctly the first time, they are those who learn from their mistakes. This is something we hope that parents will help students to understand about our subject.

Spring Half Term - 1	**9.3 Computer Systems**	Students are likely to use computer systems a lot in their everyday lives: from mobile phones, to tablets, to microwaves and music player. But do they actually know how they work, rather than just how to use them? This unit allows students to build a base for the lessons in forthcoming years and gain an appreciation and understanding for the technology that has changed the way we live our lives daily.	This unit is a theoretical part of the curriculum, this means these lessons will not be spent creating software but learning and understanding the facts about how computer systems work. As part of this unit students will also learn about how to keep their data safe on computer systems. Topics covered: ● *Hardware and Devices* ● *The CPU (Processor)* ● *Storage/Memory* ● *RAM/ROM* ● *Software* ● *Logic Gates*	In students computing lessons they will use what we call an '*eBook'*. This is an online version of an exercise book and where students make notes, complete work, complete homework and revise from. eBooks can be accessed via *Google Classroom*. ***Strategy Three: Perfect*** **-** The third of the 5 Ps is that students should look to check the work they have done in lessons and check their understanding. eBook allow students to check their work anywhere they have an internet connection. To support the students you could check their understanding of the content of their eBook. If they are not sure of anything from the lesson key knowledge sheets are posted on the 'About' tab of Google Classroom.
Spring Half Term - 2	**9.4 Networking and the Internet**	For computer systems to work effectively they must be able to communicate with each other. The internet is the largest form of the internet that everyone will need to purchase and be able to understand in their lives. Networks are smaller and more business centered however students use a network every day at school.	Students will move on from learning mostly about the basics of networks in Year 8 to more focus on the infrastructure of networks and longer answer questions that students are asked to answer in mostly GCSE subjects. Network security for companies is another learning focus, trying to help students understand more about the threats of cyber criminals to businesses and individuals.	At the end of each unit students will have some time working on 'how to revise' and will be set a revision homework. They should be aiming to find the method of revision that works best for them and help them perform to their best ability in each subject, not just IT & Computing. ***Strategy Three: Perform*** **-** As with every unit students will be tested on their knowledge at the end of each unit. All notes should be written in their eBook and key knowledge sheets on Google Classroom however additional information on each subject can be found on websites such as: www.bbc.co.uk/education/subjects/zvc9q6f www.teach-ict.com/2016/ks3/ks3_home (Login details can be collected from teachers)

Summer Half Term - 1	**9.5 Data Representation**	In this theory unit students will learn about how data is used within the computer systems from the previous unit. Data includes any letters, numbers, symbols, sounds and images. These are all stored on and sent between devices that we all use everyday.	Students should be able to understand the basics about how computer systems store and send data, as well as more technical details. This unit will fall into: ● *File Sizes* ● *Compression* ● *Binary* ● *Images* ● *Sound*	Students often find linking what they have done in the lesson to real life difficult. In all the unit in computing topics are based on knowledge students need to be able to use any digital device effectively, as well as some more technical information. You support students by showing them how the knowledge they learn in lessons can be seen in life outside of school. ***Strategy Five: Prioritise*** - In all units students will be given a grid with all of the knowledge they should be able to demonstrate at the end of a topic. Students can self-assess on this grid. Any areas they are struggling with should be the focus of their homework and class time.
Summer Half Term - 2	**9.6 Cyber Security**	As the world becomes more computer based, so does crime. It is vitally important that students have a clear understanding of the ways that cyber criminals will try and steal your data and plant harmful malware on your device. In this unit students discover some of the cyber security threats that occur both in businesses and to individuals, but also what they can do to mitigate the risk and prevent them causing damage.	Students will be given the knowledge of the following: Social Engineering ● *Phishing* ● *Pharming* ● *Shoulder Surfing* Malware ● *Trojan Horses* ● *Virus* ● *Worms* ● *Adware* ● *Spyware* ● *DoS* They will also learn how to mitigate these risks and finally present their findings in a website format.	In this unit students will not only be assessed on their knowledge of threats and mitigation but also their ability to use web design concepts to apply the knowledge learnt. ***Strategy Six: Participate*** **-** In this unit students can use other people in the class to give feedback on what they have created, we encourage students to ask others in the group for help and advice. It is very important that they make the effort to work with others and participate fully in the lessons, as well as in other units during the year.