Fareham Academy – Computer Science Overview – Year 7

Fareham Academy | Unlocking Potential Creating Opportunity

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic(s)	**Introduction to Computer Science**	**Making Programs**	**Physical Computing**	**Networking in the Modern Age**	**Communication using Blogs**	**Creating 3D Models using Sketchup**
Topic Objectives	• How to use a computer and the school system. • Learn to become a digital citizen • Understand E-safety risks & How to use technology safely. • How to protect your online identity. • Know the risks and how to report concerns. • Communicating and using Internet searches	• Introduction to Algorithms and creating programs • Use the Micro bit to create working programs that respond to movement and input • Learn how to send secret messages to one another • Learn to use structure, logic and syntax to create programs using Python	• What is a computer?How has the development of computers over the years influenced how we use and define computing. • How does a computer work? • Identifying inputs and outputs • Computer hardware components and what they do? • What is software and what is the purpose of software?	• What a Network is, how it is created, what equipment is needed to make one and how it works • Learn about the different services available using the Internet • What the Internet of Things is and how our lives are impacted by it • Develop our understanding of what the Internet is • What the Cloud is, and just where all our information goes.	• Develop understanding of word processing and how information can be used or reused for different purposes • Copyright and image/information trustworthiness. • Develop researching skills • Resource gathering - images, sounds, text. • Creating and planning a blog for a specific purpose • Learn how to create and make the most of feedback	• Develop an understanding of 3D Modelling and it's uses in our world • Learn how to create objects using 3D software, including perspective, rotation, movement and elements of realism. • Create scenes and learn to animate through 360 degrees in your scenes.
Acquired Knowledge/Skills	• Use a computer safely • Be able to identify what contributes to your digital footprint • Be aware of risks and behaviours that have negative impact when using technology • Know how keep safe or where to get help if you are affected	• Become familiar with programming constructs, how to analyse problems to develop solutions • Create programs using these constructs to build a solid foundation for text-based programming in later years	• Develop an understand of what a computer is, how they are used • Know what parts make a computer • Know the purpose of software and why we need it	• Be able to identify what a network is, how they are used • Know about different methods of network connections and some of the risks involved • Understand and explain how the Internet of Things is impacting our lives	• Be able to use a Word processor and be confident using popular functions. • Develop those skills in creating an online writing page (Blog), Develop research skills • Become familiar with Copyright and when it applies to your work	• Understand the concept of 360 degree modelling and when it is used • Create your own 3D model • Develop your 3D scene using multiple models to understand space and dimensions • Create a 3D animated scene
Assessments	• Creation of E-Safety poster • End of Topic Assessment	• Development of Python program • End of Topic Assessment	• Hands on Identification of Component parts • End of Topic Assessment	• Written piece on IOT(Internet of Things) • End of Topic Assessment	• Creation of Blog project • Live Blog published	• Practical Assessment using SketchUp • End of Topic Assessment

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SMSC						
Environmental		Enrichment Activities :Smarter City Programming - Building a smarter city to address travel, energy, environment	Environmental impact of computing on the environment. Awareness of what happens to e-waste devices, landfills across the world, negative impacts on health, ways to reuse, reduce landfill, recycle. Green computing, Cloud Computing. Objective: Written argument on the environmental impact of computing on the environment.		Website building on Good Causes including environmental, energy and reducing waste - Objective: to communicate information with a purpose	

Fareham Academy – Computer Science Overview – Year 8

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic(s)	**How Computers Work**	**Superb Spreadsheets**	**Developing Programming Skills**	**The role of computerized graphics**	**Purposeful Programming**	**Digital Sounds**
Topic Objectives	You will learn: • Understand computing components • Use computer specifications to compare computers • Analyze Computer performance • Research environmental impacts of computing • Consider future technology and future jobs • Identify correct units of measurement for specific components eg bytes or Hz. • Be able to convert from Decimal to Binary	You will learn: • What a spreadsheet is and what it is used for • Making sense of information • The importance of data • How to capture data • How to filter and sort data • Using programming to provide enhanced functionality • Customising spreadsheets • Visualising information in charts and diagrams	You will learn: • Algorithmic thinking methods • Progression from block based programming to text based programming • Become familiar with Python programming language • Use IF, ELSE and • WHILE and FOR constructs in a Python Programs • Understand and use Variables, Data Types, Operators • Enhanced programming	You will learn: • Methods of creating computerized graphics • Bitmaps and Vector graphics differences • Using graphics to solve problems • Awareness of Copyright, Trustworthiness and sharing • Digital manipulation and repurposing • Secret graphics - cyphers - steganography • Introduction to planning/ predicting using flowcharts	You will learn: • Learn object oriented programming • Comparing and contrasting programming methods and languages. • Creating mobile applications using javascript. • Demonstrate interaction with your app using object oriented programming techniques	You will learn: • How Sound is created and saved • Sound considerations • Content Sharing, plagiarism • Creating your own sounds • Manipulating sounds • Creating quality sounds
Acquired Knowledge/Skills	Awareness of computer technology, computer builds, selecting and choosing a computer based on requirements	Equation application, handling formula, evaluation techniques, graph work, presentation development, and information management	Algorithmic thinking, Python language programming, use of constructs, options, loops and standard programming terminology	Development of image types, differences, uses of graphics, coded messages using graphics, Intro to using graphics for problem solving	Adapting to object oriented programming, understanding similarities in programming methods, Introduction to Javascript language	Sound creation, development, editing and manipulation
Assessments	• Base Assessment • End of Topic	• End of Topic • Spreadsheet Quiz	• End of Topic • Python chatbot or RPG game	• End of Topic • Video Game Cover	• End of Topic • Mobile App(s)	• End of Topic • Student Podcast

SMSC	• Students are encouraged and supported to express their own beliefs as part of developing their understanding of the wider impact of computing on the environment, laws, people, jobs, finances and countries. • Understanding and appreciation of cultural diversity and faiths is discussed as part of networking topic, communicating across the globe, methods of communication, charactersets and translations. • Moral and ethical engagement and understanding is developed through a range of online safety topics and specific awareness of the - Online Safety Act, Copyright, and Patents, Computer Misuse Act, Data Protection Act throughout their learning journey. • Appropriate and relevant focus on E-safety topics gives students the opportunity to discuss making good/bad choices online and compares this with good/bad choices offline. • Students are provided opportunities to challenge prejudice, and discrimination and to understand personal morals and values and their impact on decision making through discussions and activities relating to causes and effects of cyberbullying, cybercrime, hate speech, and the impact of social media. • Debates on Online Safety scenarios(good/bad choices),and Investigation of ongoing technological developments allow students to develop critical thinking skills and apply constructive responses as they engage with a variety of artistic, musical, sporting and cultural resources. • Students are encouraged to become positive and responsible citizens and to make positive choices and behave responsibly while using technology at home and at school, at all times					
Environmental					Apps for Good - Extension to basic mobile apps learning - https://www.appsforgood.org/courses/innovate-climate-change	

Fareham Academy – Computer Science Overview – Year 9

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Real World **A focus on the digital world around us**		**The Cyber World** **Awareness of risks and responsibilities**		**The Future World** **Focus on developing for the future**	
Topic(s)	• **Digital Essentials**	• **Solutions & Analysis**	• **Cyber Aware**	• **STEM Futures**	• **Digital Insights Project**	
Topic Objectives	• Word Processing • Spreadsheets • Presentations • Networks and Navigation	• Problem Solving Approaches • Sorting and Searching Data • Program Flow and Algorithms	• E-safety • Laws and Ethics of Technology • Cyber Security • Ethical Hacking	• Transitioning to KS4 and Beyond • Using Artificial Intelligence • Machine Learning using Scratch	• Use development lifecycle • Defining a Project • Project Development • Project Implementation • Project Testing • Project Impact Review	
Acquired Knowledge/Skills	Applied knowledge and practical application of core computing skills using computing in the real world to include, finding and using files across networks, Word processing, Spreadsheets, Databases and Presentation software. Students are encouraged to become competent users of technology.	Enhanced awareness of the importance of resilience and seeking out solutions in the information age. Develop the ability to use information to make sense of the world, now and in the future. Students are supported to become capable and resilient users of technology to find answers in information.	Develop understanding of Cyber Risks and Security and how this applies to job roles, becoming a 'hacker', and knowing the legal and ethical impacts of both developing and using technology. Students are expected to be safe users of technology and be aware of the legal implications involved.	Consider how to help a computer learn. Discover the role of Predictive technologies and machine Learning/AI Develop your own AI by using Machine Learning examples. Students will consider whether to pursue computer science at GCSE level, and how their futures may be impacted by computer science.	Students will aim to develop a project focussing on the development or research of a potential solution to a problem. Ability to use the Software Development Lifecycle to design, plan and build a program to solve a life problem	

Fareham Academy – Computer Science Overview – Year 9

Assessments	• Base Assessment • Assessment leading to Digital Skills Award	• Assessment toward • Solution Analyst Award	• Assessment toward • Cyber Aware Award	• Assessment toward • Tech Visionary Award	• Evidence of Software Development Lifecycle stages and • Project Impact Review leading to • Project Engineer Award	
SMSC	• Students are encouraged and supported to express their own beliefs as part of developing their understanding of the wider impact of computing on the environment, laws, people, jobs, finances and countries. • Understanding and appreciation of cultural diversity and faiths is discussed as part of networking topic, communicating across the globe, methods of communication, charactersets and translations. • Moral and ethical engagement and understanding is developed through a range of online safety topics and specific awareness of the - Online Safety Act, Copyright, and Patents, Computer Misuse Act, Data Protection Act throughout their learning journey. • Legal Impact of Technology as well as Laws affecting development, sale, production and distribution and use of of computing hardware, software licensing and consequences of not upholding these laws • Appropriate and relevant focus on E-safety topics gives students the opportunity to discuss making good/bad choices online and compares this with good/bad choices offline. Discussions on the Moral Machine provide the opportunity to understand personal morals and values and their impact on decision making as part of understanding and development of Machine Learning • Students are provided opportunities to challenge prejudice, and discrimination through discussions and activities relating to causes and effects of cyberbullying, cybercrime, hate speech, and the impact of social media. • Debates on Online Safety scenarios(good/bad choices), advantages/disadvantages of artificial intelligence and regular news updates with opportunity to discuss impact of latest developments. • Students are encouraged to become positive and responsible citizens and to make positive choices and behave responsibly while using technology at home and at school, at all times					
Environmental		Data Science: Defining and Developing a Solution to address littering within the school. Utilising environmental statistics to make decisions about the world around you.				