Computer Science Curriculum 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	Physical Computing	Making Programs	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	• 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?	• 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 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	• 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	• 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	• 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	• 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	• 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
Assessments	Creation of E-Safety poster End of Topic Assessment	Hands on Identification of Component parts End of Topic Assessment	Development of Python program 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
Other Links (e.g. SMSC, FBV, Greener Curriculum)	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. They 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. They are also 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. Understanding and appreciation of cultural diversity and faiths is discussed as part of networking topic, communicating across the globe, methods of communication and use of technology across other countries. 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. Debates on Online Safety scenarios(good/bad choices), and regular news updates with opportunity to discuss impact of latest 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 and respond to their peers. 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. Enrichment Activities: Smarter City Programming - Building a smarter city to address travel, energy, environment.					

Computer Science Curriculum Overview
Year 8

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic(s)	Introduction to Computer Science	Superb Spreadsheets	Developing Programming Skills	The Role of Computerized Graphics	Purposeful Programming	Digital Sounds
Topic Objectives	You will learn to: • Understand computing components • Use computer specifications to compare computers • Analyse Computer performance • Research environmental impacts of computing • Consider future technology and future jobs • Identify correct units of measurement for specific components e.g. bytes or Hz.	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 aPython 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: • Object oriented programming • Comparing and contrasting programming methods and languages. • Creating mobile applications using JavaScript. • To demonstrate interaction with your app using object oriented programming techniques the most of feedback	You will learn: • How sound is created and saved • Sound considerations • Content sharing, plagiarism • Creating your own sounds • Manipulating sounds • Creating quality sounds

	• Be able to convert from Decimal to Binary					
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
Other Links (e.g. SMSC, FBV, Greener Curriculum)	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, character sets 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. Apps for Good - Extension to basic mobile apps learning - https://www.appsforgood.org/courses/innovate-climate-change					

Computer Science Curriculum Overview
Year 9

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic(s)	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	
	Digital Communication	Data Science	Threats	Solutions	Enhanced Programming Skills	End of Year Project
Topic Objectives	• How do computers communicate • Networking Devices • Network sharing - what is a network, Internet, WANs, LANs, Cloud, Internet of Things, Wireless v Wired networks • What risks are involved in using a network • Cyber-crimes and cyber security in real life	• E-safety v Cyber security • Risks to your personal information • Laws on Information • Using Data Analytics • Searching and Sorting data • Data management using programming	• Cyber risks beyond personal threats • Cyber Security • Ethical Hacking	• Develop coding skills using Python to solve problems. • Compare development of programming in a text-based environment vs GUI • User and programming considerations • Programming a Python GUI to address security risks	• Algorithmic modelling for real life situations • Using Logic, Computational Thinking and Resilience • Throughout the Software Development Lifecycle	• Raising awareness of future careers • Machine Learning • Application Programming using knowledge gained throughout the year

Acquired Knowledge/ Skills	Applied knowledge of networking equipment and use, understanding of connectivity, awareness of risks involved in use of connectivity	Enhanced awareness of the importance of information, and the ability to use information to make sense of the world, now and in the future	Develop understanding of Cyber Risks and Security and how this applies to job roles, becoming a 'hacker'	Enhanced Python skills in a GUI environment, Applied programming skills using Python	Ability to use the Software Development Lifecycle to design, plan and build a program to solve a life problem	Help a computer learn Discover the role of Predictive technologies and machine Learning/AI Develop your own AI by using Machine Learning examples
Assessments	Base Assessment	End of Topic Analytics Presentation	End of Topic	End of Topic Python Program	End of Topic Evidence of Software	End of Topic Final Program
Other Links (e.g. SMSC, FBV, Greener Curriculum)	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, character sets 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. Data Science: Defining and Developing a Solution to address littering within the school. Utilising environmental statistics to make decisions about the world around you.					