

A rigorous journey through the academic discipline of Computer Studies. Scholars will leave this course with a wealth of cultural knowledge and the ability to be confident and creative digital users.

Below shows the knowledge that is studied in Computer Studies at different points throughout a scholar's time at Astrea Academy Dearne.

Our Intended Curriculum Astrea Academy Dearne							
Year	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	What will a successful scholar look like at this stage?
7	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Basic IT skill <ul style="list-style-type: none"> Using a mouse Using a keyboard File management Formatting Emailing 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Internet safety <ul style="list-style-type: none"> Creating and sharing passwords Self-image and identity Managing information online Online relationships Online bullying Health, wellbeing and lifestyle 	<p>Knowledge that will be taught: Spreadsheet Modelling in Excel</p> <ul style="list-style-type: none"> Excel Basics. Working with Cells and Worksheets. Calculating Data. Format your Workbook. Adding Charts and Graphics. Working with Macros and the Web. 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> How Computers Work <ul style="list-style-type: none"> Hardware and software Computer specifications Inside a computer Operating Systems Computer Security 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Data representation <ul style="list-style-type: none"> Representation of data across time Encoding, transmitting and decoding data Binary digits Numbers in binary Data quantities 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Small Basic programming <ul style="list-style-type: none"> What is small basic? How to use intelligence? Basic code – IF and turtle. Loops Conditions and Branching 	<p>A successful scholar will be able to:</p> <p>Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; whilst recognising inappropriate content, contact and conduct online and offline, and know how to report concerns.</p> <p>Undertake creative projects that involve selecting, using, and combining multiple applications, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.</p>
	<p>Why this? Why now?</p> <p>To ensure that all scholars have the same level of digital literacy no matter what primary setting they have come from</p>	<p>Why this? Why now?</p> <p>To ensure that all scholars have the same level of knowledge about staying safe on the internet regardless of prior computing education</p>	<p>Why this? Why now?</p> <p>Excel and spreadsheets are skills still widely used in the workplace. Helps scholars to see a practical application of IT in the real world. There are transferable skills between functions in spreadsheets and programming.</p>	<p>Why this? Why now?</p> <p>Understanding how computers are used and should work is extremely vital. This is because knowing how to fix or replace components can be environmentally friendly, A focus particularly about the inside of a computer and operating systems is vital as these are key components that are used and interacted with every time a device or computer is used. The security issues associated</p>	<p>Why this? Why now?</p> <p>Before more advanced Computer Science scholars should have clear understand and knowledge of the foundation of Computing such as binary.</p>	<p>Why this? Why now?</p> <p>Building on the programming skills learnt in Scratch, Small Basic allows the scholars to transfer their programming skills to a text-bed programming language that serves a new purpose.</p>	<p>understand how instructions are stored and executed within a computer system, how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.</p> <p>understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]</p> <p>Understand how to transfer skills from block based programming to text-based programming.</p>
8	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> The impact of Gaming <ul style="list-style-type: none"> Impacts of Gaming Benefits of gaming Drawbacks of gaming Wellbeing and gaming Hidden gambling in gaming Real life Vs Fantasy 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Networking <ul style="list-style-type: none"> Networks and protocols Networking hardware Wired and wireless networks The internet Internet services The World Wide Web 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Adobe Animate <ul style="list-style-type: none"> Getting to know the workspace. Working with elements. Adding motion. Creating Graphics and Importing Art. Designing Animation. Refining Animation & Adding Complexity. Adding Basic Interactivity. Embedding Media and Advanced Interactivity. 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Data protection <ul style="list-style-type: none"> Right to privacy Fake news Illegal content Right to access The bubble Protecting yourself online 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Introduction to Python <ul style="list-style-type: none"> Exploring a new programming environment Transferable skills Inputs and outputs Variables Data types Operations If statements Iteration 		<p>A successful scholar will be able to:</p> <p>Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns.</p> <p>Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.</p> <p>Undertake creative projects that involve selecting, using, and combining multiple applications, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.</p> <p>Develop knowledge and skills in Small Basic to Python to solve a variety of computational problems; design and develop modular programs that use procedures or functions.</p> <p>Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.</p>
	<p>Why this? Why now?</p> <p>The Microsoft Office packages are widely used within the workplace meaning that all scholars will have the opportunity to develop vital skills for working in the current world</p>	<p>Why this? Why now?</p> <p>Follows on from the Internet Safety and Data Protection modules from Year 7 and 8 allowing for scholars to gain an understanding of how the online world around them works</p>	<p>Why this? Why now?</p> <p>Development from Adobe Photoshop units. This unit will explore more creative aspects of the Computing industry.</p>	<p>Why this? Why now?</p> <p>Following on from Internet Safety in Year 7, data protection expands on some of the subtopics taught in Year 7 and explores them in a new light</p>	<p>Why this? Why now?</p> <p>Progression to block-based programming to text-based programming using Python. Python is a highly transferable language so the knowledge picked up by the scholars can be adapted to other programming languages</p>		
9	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Introduction to Cybersecurity <ul style="list-style-type: none"> You and your data Social engineering Script kiddies DDoS Legal issues Bots Security threats Methods to protect against threats 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Python part 2 <ul style="list-style-type: none"> Understand and use variables. work with common Python data types like integers, floats, strings, characters, lists, dictionaries, as well as pandas DataFrames. use basic flow control, including for loops and conditionals. read data from text files. obtain basic summary statistics from data files. 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Photoshop <ul style="list-style-type: none"> Careers Ethics of photo manipulation Project planning Adding text Fill effects Shapes tool Eyedropper tool Quick selection tool 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Web Development- <ul style="list-style-type: none"> HTML The internet Website fundamentals HTML and CSS sheets Project planning 	<p>Knowledge that will be taught:</p> <ul style="list-style-type: none"> Physical Computing Project <ul style="list-style-type: none"> can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems are responsible, competent, confident and creative users of information and communication technology 		<p>A successful scholar will be able to:</p> <p>understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns</p> <p>understand how instructions are stored and executed within a computer system, how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.</p> <p>understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems</p> <p>understand simple Boolean logic [for example, AND, OR</p>

Why this? Why now? Follows on from internet safety, data protection and networking from previous years and discusses how people can abuse networks to cause harm to others	Why this? Why now? Provides an essential basis to allow students to understand computational thinking, and allow access to the GCSE curriculum.	Why this? Why now? Photoshop is an industry standard software for photo manipulation that can be used in a variety of jobs	Why this? Why now? Building on the programming skills learnt in Scratch, HTML allows the scholars to transfer their programming skills to a different programming language that serves a new purpose	Why this? Why now? It is a great basis for the Python topic next and provides essential knowledge which the Python unit builds upon.	and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
					Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
					Understand how to create accessible websites using markup language

Key Stage 4

10 CS	Knowledge that will be taught: Computational Thinking <ul style="list-style-type: none"> Decomposition and abstraction Algorithms Introduction to Python 	Knowledge that will be taught: Computers <ul style="list-style-type: none"> Hardware Software Program languages 	Knowledge that will be taught: Developing code <ul style="list-style-type: none"> Constructs Data types and structures Input/output Operators subprograms 	Knowledge that will be taught: Data <ul style="list-style-type: none"> Binary Data representation Data storage Compression 	Knowledge that will be taught: <ul style="list-style-type: none"> 6.1 Develop code 	Knowledge that will be taught: <ul style="list-style-type: none"> 4.1 Networks 4.2 Network security 	Knowledge that will be taught: <ul style="list-style-type: none"> 6.1 Develop code 	Understand what algorithms are, how they are used and how they work in relation to creating programs. Develop the skills and knowledge to be follow, amend and write algorithms. Understand what binary, data representation and compression is.
	Why this? Why now? Key concepts that are an essential base for the rest of the qualification.	Why this? Why now? Provides a basis for further topics, for example, binary is essential knowledge to understand some aspects of 3.1 Hardware and 3.2 Software. These topics allow for understanding and are the base knowledge for the Network topics.	Why this? Why now? To ensure all scholars have a strong basis of Python programming knowledge.	Why this? Why now? These topics allow for understanding and are the base knowledge for the Network topics.	Why this? Why now? To ensure all scholars have a strong basis of Python programming knowledge.	Why this? Why now? Networking topics allow the scholars to consider computers on a macro scale. It also allows the	Why this? Why now? To ensure all scholars have a strong basis of Python programming knowledge.	Understand and develop an awareness of emerging trends in computing technologies, and the impact of computing has on individuals, society and the environment. Including; ethical, legal and ownership issues. Understand hardware and software components of computer systems and characteristics of programming languages. develop and apply their analytic, problem-solving, design, and computational thinking skills Understand computer networks and network security. understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concern

10 ICT	Knowledge that will be taught: Modern Technologies <ul style="list-style-type: none"> Collaborative and communication tools What is the cloud Traditional systems Implications of online and traditional services Positive and negatives of modern technologies of individuals and organisations 	Knowledge that will be taught: Cyber Security <ul style="list-style-type: none"> Why systems are attacked Internal threats External threats Impacts of security breach How to prevent cyber security Policy 	Knowledge that will be taught: Wider Implications of digital systems <ul style="list-style-type: none"> Who is responsible Legal and ethical Why have policies? Data and the interest Data Protection Act Computer Misuse Act Intellectual Property Criminal Use of digital systems 	Knowledge that will be taught: Planning and communicating in digital systems <ul style="list-style-type: none"> Forms of notation – flow, dataflow, diagrams, tables and written communication. User Interface Design <ul style="list-style-type: none"> Assessing user interfaces User requirements Audience requirements Design principles Hardware and software requirements 	Knowledge that will be taught: Creating dashboards <ul style="list-style-type: none"> Use of formula to manipulate Data reliability Data suitability Data validation Presentation of data Data collection methods Quality of data Decision making	Knowledge that will be taught: Design and creation of User Interface <ul style="list-style-type: none"> Project planning tools Risks and constraints Accessibility requirements Project requirements Producing designs Selecting appropriate software	A successful scholar will be able to: develop key skills in digital information technology, such as project planning, designing and creating user interfaces, creating dashboards to present and interpret data understand the process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct understand and consider attitudes that are considered most important in digital information technology, including personal management and communication develop and understand knowledge that underpins effective use of skills, process and attitudes in the sector such as how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security and legal and ethical issues
	Why this? Why now? Understanding how modern technology is used for communication, working collaboratively are important for every digital practitioner.	Why this? Why now? Understanding why systems are attacked and how to protect them is essential knowledge for any person using digital systems,	Why this? Why now? Knowing the laws and ethics is essential knowledge when it comes to using digital systems.	Why this? Why now? Understating how to communicate using effective ways that can support in problem solving.	Why this? Why now? Developing skills to build effective user interfaces that meet the requirements is an essential digital skill as it develops an understanding of project management, meeting user needs and reflecting on practice.	Why this? Why now? Developing skills to build effective data dashboards that meet the requirements is an essential digital skill as it develops an understanding of project management, meeting user needs and reflecting on practice.	

11 ICT	Knowledge that will be applied User Interface Design <ul style="list-style-type: none"> Assessing user interfaces User requirements Audience requirements Design principles Hardware and software requirements 	Knowledge that will be applied Creating dashboards <ul style="list-style-type: none"> Use of formula to manipulate Data reliability Data suitability Data validation Presentation of data Data collection methods Quality of data Decision making 	Knowledge that will be applied Design and creation of User Interface <ul style="list-style-type: none"> Project planning tools Risks and constraints Accessibility requirements Project requirements Producing designs Selecting appropriate software 	Knowledge that will be applied Dashboard development <ul style="list-style-type: none"> Techniques to improve presentation Ease of use Presentation of data as graphs, tables Data summaries Review of Data Assessments of: Presentation methods How to make recommendations Drawing conclusions Investigating bias, misleading and misinformation.	Knowledge that will be applied Developing and reviewing User Interface <ul style="list-style-type: none"> Obtaining user feedback Refine and review Evaluate effectiveness of user interface in meeting requirements 	Knowledge that will be taught: Developing understanding and revision of Effective Digital Practices. <ul style="list-style-type: none"> Modern Technologies and collaboration Cyber Security and policy The legal and ethical impact of digital systems Planning communication in digital systems 	A successful scholar will be able to: develop key skills in digital information technology, such as project planning, designing and creating user interfaces, creating dashboards to present and interpret data understand the process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct understand and consider attitudes that are considered most important in digital information technology, including personal management and communication develop and understand knowledge that underpins effective use of skills, process and attitudes in the sector such as how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security and legal and ethical issues
	Why this? Why now? Coursework completion	Why this? Why now? Coursework completion	Why this? Why now? Coursework completion	Why this? Why now? Coursework completion	Why this? Why now? Coursework completion	Why this? Why now? Preparation for exam series	