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| **Curriculum rationale & design** | The Computing Faculty at Astrea Academy Woodfields recognise that every child matters. We believe therefore that an ambition curriculum for all should be provided so pupils can thrive in modern day Britain, whether that be today or in the future. The curriculum is designed to provide inclusive opportunities for all pupils irrespective of background with a focus on broadening experiences and knowledge of computer science, computer studies, business studies subjects |
| **Curriculum aims** | Primary school students in the local area of Balby have limited access to technology at home. If they do use technology, it is no longer the conventional type of desktop computers and or laptops. They are using gaming consoles, entertainment devices and smart devices and are lacking the computer related skills required to type, save, search for files, finding appropriate information on the internet and how to communicate via email correctly. Every student deserves to be provided with the opportunity to understand this as it is an essential life skill.  The aim of the curriculum is to expose students to as many fundamental aspects of computer science and ICT as possible in a safe and supportive environment. In addition, topics within the curriculum have been selected to support pupils with knowledge and experience to access the digital industries, should they decide this.  Curriculum end point: Year 7 scholars will:  • be confident users of computers  • be able to understand a range of ways to use technology safely and respectfully  • be able to use basic programming techniques  • be able to understand how a computer works  • be able to develop skills in spreadsheet development  • be able to see how data is represented in a range of formats  • be able to gain an understanding of how data is used responsibly and securely  • use a range of software to record and review work  Curriculum end point: Year 8 scholars will:   * understand the positive and negatives of gaming. * understand the fundamentals of hardware and software components, including how they communicate with one and other with other systems. * develop their programming skills using Python, including computational thinking and data structures. * use Photoshop and understand the impact it has on society. * develop websites using HTML. * Create videos using Adobe software. * record findings in appropriate software   Curriculum end point: Year 9 scholars will:  understand how to use a range of technology, including how to protect themselves online   * develop and understand how business studies can play a role with technology (spreadsheets) * develop skills to build website using HTML and CSS * evaluate and review programmes * understand how to plan, design, and create video content.   Computer Science:  KS4 Our computer science curriculum is designed to be engaging and practical, encouraging creativity and problem solving, allowing students to develop their understanding and application of the core concepts in computer science. Students will be able to analyse problems in computational terms and devise creative solutions by designing, writing, testing and evaluating programs. By the end of year 11 students will know;  • how computers work. Including, CPU, memory and storage  • how computers communicate  • networking infrastructure  • how to use technology safely, respectfully and how to protect their digital footprint. Including system security and Ethical, Legal, Cultural and Environmental concerns  • continue to develop their programming skills  • develop and apply their analytic, problem solving and computational thinking skills  • apply mathematical skills relevant to Computer Science  • to develop and apply key programming techniques  Business Studies:  KS4 Students at Astrea Woodfields will leave school with a wide variety of business knowledge that allow them to join the world of work. The business curriculum will provide students with the skills and knowledge to be able to:  • understand the purpose of the organisations they will work for and the role they hold within it.  • understand the economic world around them and will make informed decisions and contribute towards business success including; Operational, Human Resources and Marketing aspects  • learn and acquire the necessary skills and knowledge to allow opportunities for success within a company  • have the confidence to become a self-sufficient entrepreneur; remembering how each topic will contribute to their success in the world of work  • understand the impacts of external influences of businesses  • how businesses grow  • how finances are used in business |
| **Assessment** |  |

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| **Year 7** | Knowledge that will be taught:  **Basic IT skill**   * Using a mouse * Using a keyboard * File management * Formatting * Emailing | Knowledge that will be taught:  **Online safety**   * Creating and sharing passwords * Self-image and identity * Managing information online * Online relationships * Online bullying * Health, wellbeing and lifestyle | Knowledge that will be taught:  **PowerPoint creative project**   * Slide master * Navigation * Transitions * Animations * Project planning * Careers | Knowledge that will be taught:  **Basic IT skill**   * Using a mouse * Using a keyboard * Office 365 * Teams * Email * File management * Formatting   Knowledge that will be taught:  **Photoshop**   * Careers * Ethics of photo manipulation * Project planning * Adding text * Fill effects * Shapes tool * Eyedropper tool * Quick selection tool | Knowledge that will be taught:  **Introduction to Scratch**   * Exploring a new programming environment * Sequences * Making sprites move * Loops * If, then and else constructs * Comparison operators * Variables | Knowledge that will be taught:  **Small Basic programming**  What is small basic?  How to use intelligence?  Basic code – IF and turtle.  Loops  Conditions and Branching |
| **Year 8** | Knowledge that will be taught:  **Data protection**   * Right to privacy * Fake news * Illegal content * Right to access * The bubble   Protecting yourself online | Knowledge that will be taught:  **Networking**   * Networks and protocols * Networking hardware * Wired and wireless networks * The internet * Internet services * The World Wide Web | Knowledge that will be taught:  **Spreadsheet Modelling in Excel**   * Excel Basics. * Formulas * Functions * Data collection * Charts and Graphs   Conditional Formatting | Knowledge that will be taught:  **Basic IT skill**   * Using a mouse * Using a keyboard * Office 365 * Teams * Email * File management * Formatting   Knowledge that will be taught:  **Web Development-**   * HTML * The internet * Website fundamentals * HTML and CSS sheets   Project planning | Knowledge that will be taught:  **Adobe Animate**   * 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. | Knowledge that will be taught:  **Introduction to Python**   * Exploring a new programming environment * Transferable skills * Inputs and outputs * Variables * Data types * Operations * If statements   Iteration |
| **Year 9** | Knowledge that will be taught:  **Introduction to Cybersecurity**   * You and your data * Social engineering * Script kiddies * DDoS * Legal issues * Bots * Security threats * Methods to protect against threats | Knowledge that will be taught:  **Data representation**   * Representation of data across time * Number Bases * Binary conversion * Binary mathematics * Hexadecimal conversion * ASCII | Knowledge that will be taught:  **The impact of Gaming**   * Impacts of Gaming  * Benefits of gaming * Drawbacks of gaming * Wellbeing and gaming * Hidden gambling in gaming * Real life Vs Fantasy | Knowledge that will be taught:  **Basic IT skill**   * Using a mouse * Using a keyboard * Office 365 * Teams * Email * File management * Formatting | Knowledge that will be taught:  **How Computers Work**   * Hardware and software * Computer specifications * Inside a computer * Operating Systems * Computer Security | Knowledge that will be taught:  **Python project**   * Computational Thinking * Representing Algorithms * Python Recap * Lists * While loops * For loops |
| **Year 10 CS** | **Topic 1: Fundamentals of Algorithms**   * Representing Algorithms * Efficiency of Algorithms * Searching Algorithms * Sorting Algorithms   **Topic 2: Programming (Theory)**   * Data Types * Programming concepts * Arithmetic Operations * Relational Operators * Boolean Operators * Data Structures * Input / Output * String Handling * Random Library * Structured Programming and Sub-Routines   **Topic 2: Programming (Practical)**   * Data Types * Programming concepts * Arithmetic Operations * Relational Operators * Boolean Operators * Data Structures * Input / Output * String Handling * Random Library * Structured Programming and Sub-Routines | | **Topic 3: Fundamentals of Data Representation**   * Number Bases * Units of Information * Binary Arithmetic * Character Encoding * Representing Images * Representing Sound * Data Compression   **Topic 4: Computer Systems**   * Hardware and Software * Boolean Logic * Software Classification * Classification of Programming Languages * Systems Architecture | | **Topic 3: Fundamentals of Data Representation**   * Number Bases * Units of Information * Binary Arithmetic * Character Encoding * Representing Images * Representing Sound * Data Compression   **Topic 4: Computer Systems**   * Hardware and Software * Boolean Logic * Software Classification * Classification of Programming Languages * Systems Architecture | |
| **Year 11 CS** | **Topic 2: Programming (Practical Revisited)**   * Data Types * Programming concepts * Arithmetic Operations * Relational Operators * Boolean Operators * Data Structures * Input / Output * String Handling * Random Library * Structured Programming and Sub-Routines   **November Mock Exam Revision**   * Algorithms * Programming Theory and Practical * Data Representation * Computer Systems Computer Networks * Cyber Security * Ethical, Legal and Environmental Impacts | | **Topic 7: Relational Databases and SQL**   * Relational Databases Structured Query Language (SQL)   **February Mock Exam Revision**   * Algorithms * Programming Theory and Practical * Data Representation * Computer Systems Computer Networks * Cyber Security * Relational Databases and SQL * Ethical, Legal and Environmental Impacts   **Topic 8: Ethical, Legal and Environmental**   * Impact of Digital Technology * Cyber Security * Mobile Technologies * Wireless Networks * Cloud Storage * Wearable Technologies * Computer Based Implants * Autonomous Vehicles | | **Final Exam Preparation**   * Algorithms * Programming Theory and Practical * Data Representation * Computer Systems Computer Networks * Cyber Security * Relational Databases and SQL * Ethical, Legal and Environmental Impacts | |
| **Year 10 BS** | | |  | | --- | | 1.1.1 The dynamic nature of business | |  | | * + 1. Risk and reward | |  | | * + 1. The role of business enterprise     2. Added Value     3. Role of entrepreneurship | | |  | | --- | | 1.2.1 Customer needs | |  |   1.2.2 Market research  1.2.3 Market segmentation  1.2.4 The competitive environment  Business Plan project-   * Risks and rewards * Objectives * Segmentation / Customer needs * Market mapping   Market Research | 1.3 Aims and objectives  1.3 Sources of finance  1.3 Revenues, costs and profits  1.3 Cash flow  1.3 Improving revenue and cash flow  1.3 Breakeven | 1.4.1 The options for start-up and small businesses  1.4.2 Business location  1.4.3 The marketing mix Product   * Price * Place * Promotion * Differentiation   1.4.4 Business plans | 1.5.1 Business stakeholders  1.5.2 Technology and business  1.5.3 Legislation and business   * Consumer * Employee   1.5.4 The economy and business   * Business Cycle * Exchange Rates   1.5.5 External influences   * SWOT | 2.1.1 Business growth   * Organic * Inorganic * Financing   2.1.2 Changes in business aims and objectives  2.1.3 Business and globalisation  2.1.4 Ethics, the environment and business   * Ethics * Pressure Groups * Environment * Government |
| **Year 11 BS** | | 2.1.1 Business growth   * Organic * Inorganic * Financing   2.1.2 Changes in business aims and objectives  2.1.3 Business and globalisation  2.1.4 Ethics, the environment and business   * Ethics * Pressure Groups * Environment   Government | 2.2.1 Product  2.2.2 Price  2.2.3 Promotion  2.2.4 Place  2.2.5 Using the marketing mix to make business decisions | 2.3.1 Business operations   * Operations * Stock * Technology   2.3.2 Working with suppliers  2.3.3 Managing quality  2.3.4 The sales process  3 Finance recap (needs to be built on before 2.4)  2.4 Making Financial Decisions | 1.3 Revenues, costs and profits  1.3 Cash flow  1.3 Breakeven  2.4.1 Business calculations   * Gross Profit * Net Profit * ARR   2.4.2 Understanding business performance | 2.5.1 Organisational structures  2.5.2 Effective recruitment  2.5.3 Effective training and development  Employment law  2.5.4 Motivation | |