

## Key Stage 3: Year 7 Computer Science 2025-2026

Overall Curriculum Goals			
<ul style="list-style-type: none"> <li>To understand how to use computer network and wider collaborative IT systems at Brian Clarke, safely.               <ul style="list-style-type: none"> <li>To understand the programming process using event driven programming</li> <li>To understand the concept of building programs for given scenarios</li> <li>To understand the concept of algorithms and instructions/events/actions                   <ul style="list-style-type: none"> <li>To understand how technology has advanced over time and</li> </ul> </li> </ul> </li> </ul>			
Topic 1 (8)	Topic 2 (8)	Topic 3 (8)	Topic 4 (8)
<b>Introduction to the network</b> <ul style="list-style-type: none"> <li>Logging onto the network</li> <li>Setting and changing passwords</li> <li>Creating folders and structuring home drives</li> <li>Saving and accessing work</li> <li>Accessing, sending, and receiving emails (with attachments)</li> <li>Accessing SharePoint and downloading resources</li> <li>Checking homework on TEAMS</li> </ul> <b>Staying safe online</b> <ul style="list-style-type: none"> <li>Online Safety</li> <li>Catfishing</li> <li>CEOP</li> </ul>	<b>Basic Programming using Kodu</b> <ul style="list-style-type: none"> <li>Creating a world</li> <li>Events and Actions</li> <li>Variables</li> <li>Using selection statements</li> <li>Creating paths</li> </ul> <p>Two lessons during this topic to be utilised for BEBRAS:</p> <p>Lesson 1 – Practice using previous years tasks</p> <p>Lesson 2 – Actual BEBRAS entry</p>	<b>Programming using Python (Turing Lab - Farmbot)</b> <ul style="list-style-type: none"> <li>Introduction to text-based programming language</li> <li>Introduction to Integrated Development Environment</li> <li>Creating Simple Algorithms</li> <li>Identifying bugs</li> <li>The importance of Syntax</li> <li>Using Strings</li> </ul>	<b>Computer Hardware</b> <ul style="list-style-type: none"> <li>Advancements in Technology</li> <li>The CPU</li> <li>RAM and ROM</li> <li>Input and Output Devices</li> <li>Internal Hardware</li> <li>External Hardware</li> <li>Accessibility of Devices</li> </ul>
Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas
Network Username Password Unique File Folder Structure Email Email Attachment Grooming Digital Footprint CEOP	Event Action Terrain / World Selection Loop / Repetition Variable	Computer Program Algorithm Sequences String Variable Bugs Debugging IDE Strings Syntax	CPU RAM ROM Volatile Input Device Output Device Internal Hardware External Hardware Heat Sink
CEIAG	CEIAG	CEIAG	CEIAG
	<b>BEBRAS Challenge (November)</b> <b>Computer game developer roles</b> (Gatsby Benchmark 4)	Programming Skills – Applications to jobs in all areas of computing and jobs that don't involve computers as well as traditional programming roles. (Gatsby Benchmark 4)	

### Key Stage 3: Year 8 Computer Science 2024-2025 (1 year only)

Overall Curriculum Goals			
<ul style="list-style-type: none"> <li>Understand cyber security threats, risks, and vulnerabilities.               <ul style="list-style-type: none"> <li>Understand how to develop a website using HTML code.</li> </ul> </li> <li>Develop programming skills in Python, becoming more familiar with advanced syntax.               <ul style="list-style-type: none"> <li>Understand different pieces of internal and external hardware</li> </ul> </li> </ul>			
Topic 1 (8)	Topic 2 (8)	Topic 3 (8)	Topic 4 (8)
<b>Cyber /Cyber security</b> <ul style="list-style-type: none"> <li>Introduction to cyber and cyber security issues</li> <li>Cyber crime</li> <li>Cyber in sport</li> <li>Data analysis</li> <li>Use of AI and bots</li> <li>Hacking</li> <li>Malware</li> </ul>	<b>HTML website creation</b> <p>Pupils create website based on cyber security research in previous topic</p> <ul style="list-style-type: none"> <li>Creating the HTML skeleton</li> <li>Adding headings and paragraphs</li> <li>Formatting Text</li> <li>Changing backgrounds</li> <li>Adding Images</li> <li>Adding Hyperlinks</li> <li>Creating Tables</li> <li>Using Style Tags</li> <li>Structuring Code</li> </ul> <p>Students will also complete a lesson on Microsoft Excel where they will look at how to create graphs based on data. This will be done after the lesson on tables.</p> <p>Two lessons during this topic to be utilised for BEBRAS: Lesson 1 – Practice using previous years tasks. Lesson 2 – Actual BEBRAS entry</p>	<b>Developing Programming Skills using Python (Turing Lab - Farmbot)</b> <ul style="list-style-type: none"> <li>Introduction to Integrated Development Environment</li> <li>Creating Simple Algorithms</li> <li>Identifying and removing bugs</li> <li>The importance of Syntax</li> <li>Using Strings</li> <li>Using variables</li> <li>Identify and use functions</li> <li>Identify and use arguments</li> </ul>	<b>Hardware</b> <ul style="list-style-type: none"> <li>Advancements in Technology</li> <li>The CPU</li> <li>Job role of the CPU</li> <li>RAM and ROM</li> <li>Input and Output Devices</li> <li>External Hardware</li> <li>Internal Hardware (HDD, Heat Sink, Graphics Card)</li> <li>Accessibility of Devices</li> </ul>
Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas
Cyber Cybernetics Data Set Sort (Excel) Filter (Excel) Open-Source Intelligence Data Analysis Bot Artificial Intelligence Hacking	HTML Notepad++ Tags Formatting Gradient Style Structure Image Graphical Representation	<i>Previous programming terms will be recapped.</i> Computer Program Algorithm Sequences String Variable Bugs Debugging IDE Strings Syntax Functions Arguments Indentation	CPU Clock Speed Number of Core Cache Memory RAM ROM Volatile Input Device Output Device Internal Hardware External Hardware Fin (Heat Sink) FPS
CEIAG	CEIAG	CEIAG	CEIAG
Cybernetics and Data - Careers in Cyber and data analysis across different industries (Gatsby Benchmark 4)	BEBRAS Challenge Discussions re: web development roles - (Gatsby Benchmark 6) Cyber First Trailblazer Day Trip – Applications to jobs in data encryption and cyber security (Gatsby Benchmarks 4, 5 & 6) NCSC Cyber Competition – Exposure to cryptography roles - (Gatsby Benchmarks 4 6)		

### Key Stage 3: Year 9 Computer Science 2024-2025 (1 year only)

Overall Curriculum Goals			
<ul style="list-style-type: none"> <li>Understand how data is represented in computers.</li> <li>Understand what encryption is and why we use it.</li> <li>Build on existing python knowledge and understand and apply structured programming concepts.               <ul style="list-style-type: none"> <li>Understand data science</li> <li>How to use data to investigate problems</li> </ul> </li> </ul>			
Topic 1 (8)	Topic 2 (8)	Topic 3 (8)	Topic 4 (8)
<b>Data Representation and Encryption</b> <ul style="list-style-type: none"> <li>Binary conversions</li> <li>Hexadecimal conversions</li> <li>How images are stored in binary</li> <li>How sound is stored in binary</li> <li>Encryption</li> <li>Types of encryption (Caesar Cipher)</li> </ul> <p>Two lessons during this topic to be utilised for BEBRAS:</p> <p>Lesson 1 – Practice using previous years tasks Lesson 2 – Actual BEBRAS entry</p>	<b>Developing Programming Skills using Python (Turing Lab – Farmbot/ Farmbot Extra / Smart Cities)</b> <ul style="list-style-type: none"> <li>Creating Algorithms</li> <li>Identifying and removing bugs</li> <li>The importance of Syntax</li> <li>Using Strings</li> <li>Using Variables</li> <li>Iteration</li> <li>For Loop</li> <li>Identify and use functions</li> <li>Identify and use arguments</li> <li>Using comments in code</li> </ul>	<b>Mobile App Development (APP LAB)</b> <ul style="list-style-type: none"> <li>Understand objectives and requirements of Health &amp; Fitness Tracker APP</li> <li>User centred design principles</li> <li>Understand key online safety measures applicable to mobile apps</li> <li>Understand hardware components of mobile phones and their uses in app development</li> <li>Hardware limitations</li> <li>App development process &amp; tools used</li> <li>Start building the core features of app</li> <li>Collaborate with peers to troubleshoot problems and provide feedback on each other’s apps</li> </ul>	<b>Data Science</b> <ul style="list-style-type: none"> <li>Introduction to data science</li> <li>Visualising data (data sets)</li> <li>Analysing data to Identifying patterns, trends and outliers</li> <li>Recognise where large data sets are used in everyday life</li> <li>Selecting criteria and use data set to investigate predictions</li> <li>Evaluate findings to support arguments for/against a cause.</li> <li>Define terms ‘correlation’ and ‘outlier’</li> <li>Identify and use steps of the investigative cycle</li> <li>Use findings to support a recommendation</li> <li>Identify data needed to answer a question</li> <li>Create a data capture form</li> <li>Apply data cleansing techniques</li> <li>Draw conclusions and report finding</li> </ul>
Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas	Key Vocabulary/Concepts/Ideas
Binary Denary Base Hexadecimal Pixel Sample Rate Sample Resolution Encryption Key Caesar Cipher	<u>Previous programming terms will be recapped.</u>  Computer Program Algorithm Sequences Bugs Debugging IDE Strings Variables Syntax Functions Arguments Comments Indetation	Integrated Development Environment App Wireframe Hardware Accelerometer GPS Privacy Consent	Data Science Data Pattern Trend Insights Correlation Outlier Visualise
CEIAG	CEIAG	CEIAG	CEIAG
Jobs in cyber security (Gatsby Benchmarks 4, 5 & 6)	<b>BEBRAS Challenge</b>	Cyber First MEGA Hub day– Applications to jobs in data encryption and cyber security (Gatsby Benchmarks 4, 5 & 6)	

