



All Saints' Academy Computer Science Department KS3 Curriculum Overview - September 2023_24

| Cycle | 7 | | 8 | | 9 | | Enrichment |
|---------|---|---|---|--|---|--|--|
| Careers | Cycle 1: Software Developer, Embedded System Engineer or STEM Educator | | Cycle 1: Graphics Designers, UI Interface designer or motion Graphics Designer | | Cycle 1: Computer Hardware Engineer, Software Tester or Memory Systems Architect | | Cyber and Coding Club Thursday 3:10 – 4:10 |
| 1 | <u>Introduction to using a computer & Programming 1 – Kodu</u> - Be able to log in, create files and folders and manage your workspace effectively - Introduced to KODU and its programming environment - Explore movements, characters, and terrain building - Make use of the block-based coding skills to build a successful game - Drive your own project to create an exciting and intuitive game | <u>Introduction to Micro: bits</u> - Introduction to the Micro: bit and familiarity with its interface and working(s) - Use a range of variables, loops, conditionals, and event driven programming - Navigate through a series of tutorials, enhancing knowledge of the micro: bit - Design and implement unique projects that demonstrate versatility and creative thinking. - Work collaboratively on projects - Think widely and adopt further use for the micro: bit and getting it to integrate with Scratch too. | <u>Google Sketch Up / Industry Skills in using a computer</u> - Demonstrate proficiency in using Google SketchUp tools and features to create 3D models - Effectively apply principles of scale, proportion, and perspective in their 3D models - Showcase creativity and innovation by designing original and imaginative 3D models overcoming challenges or complexities in their 3D modelling process - Reflect on their learning experiences and demonstrate an understanding of the practical applications of 3D modelling and design in various industries, | <u>Vector Graphics in Inkscape</u> - Use Inkscape to draw and manipulate shapes - Group and manipulate objects - Combine paths - Convert, draw, and edit paths - Create a vector design based on a scenario | <u>Computer Systems: Hardware & Software</u> Have knowledge of: -Systems Architecture & how the CPU works, including knowledge of Registers -Know what an OS Embedded and Utility Software are -Be familiar with how the CPU can be affected -Have a good understanding of the Fetch- Decode and Execute Cycle | <u>Computer Memory, storage & Moral, Legal, Cultural concerns</u> -Understand RAM and ROM -Know the difference between Primary and Secondary Storage -Know 3 types of Secondary Storage: Optical, Magnetic and Solid State -Advantages and Disadvantages of storage devices -Know basic Units and why they need to be stored in Binary format -Have a basic understanding of Sound, & Image conversion -Know the difference between Lossy and Lossless. | Year 7 – Cyber Explorers Year 8 – BEBRAS Year 9 – Raspberry Pi Set up and configuration |
| Careers | Cycle 2: Cyber Security Analyst or Data Scientist | | Cycle 2: Game Designer, Game Artist or Game Tester | | Cycle2: High Level Computer Programmer, Data Analyst or Logic Designer | | Cyber and Coding Club Thursday 3:10 – 4:10 |
| 2 | <u>Cyber Explorers</u> Through interactive activities and educational modules, students will develop essential skills to navigate the digital world safely and responsibly. -Introduction to Cyber Security -Personal Cyber Security -Cyber Ethics and Online Citizenship - Cyber Security challenges and solutions - Showcasing what you have learnt | <u>Data Science – Spreadsheets & FLOWOL 4</u> Introduce students to the purpose and capabilities of spreadsheet software. Develop essential skills in data entry, formatting, and formula creation. Promote critical thinking and problem-solving abilities through data analysis and modelling. Find ways to present data visually Enhance computational thinking skills using logic and functions Be prolific in SEQUENCING, SELECTION and ITERATION in a series of Controlled experiments using specialist software. . | <u>Game Maker using make code arcade</u> The aim of this project is to introduce Year 8 students to game development using Game Maker Arcade. The students will learn the basics of game design, programming logic, and interactive storytelling while creating their own arcade-style games. The project will span a set duration and will be divided into several key phases: - Introduction and Orientation - Game Design and Planning - Game Development - Game Refinement and Testing - Presentation and Showcase | | <u>Computational Logic & Algorithms</u> Principles of Computational Thinking: Abstraction, decomposition and Algorithmic Thinking Design, Create and Refine algorithms: Use flowcharts and understand basic flowchart symbols | <u>Programming Techniques & Data Representation</u> Understand programming fundamentals, including SEQUENCE, SELECTION and ITERATION . Know common arithmetic operators and use them Know what a variable, constant, inputs, outputs and assignments are Know the 5 data types and understand how they are used in working programs | Year 7 - Year 8 – Game Development Competition Year 9 – Cyber Adventurers |
| Careers | Cycle 3: Social Media Manager, SOC Analyst, Cyber Security Awareness Trainer | | Cycle 3: Front-end Developer, Web Designer or UX Designer | | Cycle 3: Game Develop, AI Engineer or Ethical Hacker | | Cyber and Coding Club Thursday 3:10 – 4:10 |
| 3 | <u>Graphics Designing using Canva</u> -Introduction to Canva - Graphic Design Principles and Elements - Designing Marketing Materials - Presentations and Infographics - Showcasing | <u>Cyber Security</u> Introduce you to the fundamentals of cyber security and empower you with the knowledge and skills to protect yourself and others in the digital world. -Introduction to Cyber Security -Online Safety and Privacy -Digital Footprint and social media -Cyber Security Tools and Techniques | <u>Website Development using Replit</u> Introduce you to the basics of website creation and design. -Describe, use, and modify HTML -Display Images -Apply HTML tags to construct a Web Page -Describe, use, and assess the importance of CSS -Use Search technology effectively -Apply Hyperlinks to navigate between webpages | | <u>Programming Project</u> You will have an opportunity to run with a programming project of choice, or through a pre-written problem issued to you. This will allow you to Design, write, test and refine code to a high standard. A fundamental skill when going into the digital world. You will complete a set of challenges to, whilst demonstrating your ability to successfully plan and develop a working solution. | | Year 7 – VR Experience Year 8 – Web Design Contest Year 9 – App Development Challenge/ Competition |