Business & Computer Science Programme of Study: 2024-25

Department: Business & Computer Science

KS3 Computing Curriculum Intent/Vision

Vision

Our ICT KS3 curriculum is designed to develop confident, digital citizens who will be enthused with an interest in computational thinking and problem solving. Lessons are designed to be delivered ensuring all students experience quality first teaching and challenge within the classroom.

The curriculum is designed to familiarise students with the Google Environment and give them opportunities to use a variety of programs for different tasks, thereby increasing their digital literacy cultural capital which will underpin much of their work in school. The ability to use a range of applications, select the correct piece of software for a given task and use skills they have learned to produce their work efficiently and effectively is all-important for digitally literate students. Students will experience a range of programming languages in which to demonstrate their creativity in analysing and solving problems, in an equitable environment of supportive inclusion.

This will empower students to use their computational skills across a wide-ranging curriculum - to enhance their learning, their confidence and their resilience as digital citizens of the 21st century.

Curriculum Summary

On entering Kings Academy Easthampstead Park in Year 7, students learn how to login to the school network, recognising the importance of secure passwords and how the Google environment works. Students advance through understanding computer hardware, identifying input and output devices and learning about binary. They develop web pages using HTML programming language to create several linked pages about e-safety which then leads them into exploring the school Acceptable Use Policy and using DeskTop Publishing software to display the key features. To develop their programming knowledge students are introduced to flowcharts and Logo (turtle) to create shapes and loops and write procedures. Year 7s will further develop their digital literacy skills by developing their software capability by making an interactive quiz using a range of advanced features. Finally, they use block programming to programme a Microbit and develop their knowledge of Cyber Security. This takes them through a core skills development of **sequencing, selection** and **iteration** - the 3 core concepts underpinning computer science.

In year 8 students develop further digital literacy skills through using graphics and publishing software to communicate information. They are introduced to database software and learn how to query the database for key information using field names. Their programming experience will continue through the use of Scratch.   They will investigate computer networks and use of the World Wide Web.   Students will be able to confidently use the EP computer system and be aware of the functionality of a range of software that we use on the system. They will have a growing understanding of the 3 core programming concepts from Year 7 to Year 9 in relation to sequencing, iteration and selection. They will build upon their knowledge and understanding of binary by focussing on making digital media such as images and sounds, and discover how media is stored as binary code. The overarching development and cohesion of their logical thinking will enable them to apply their knowledge and digital literacy across a range of curriculum subjects.

In Year 9 students are introduced to graphics editing software and develop an understanding of working with layers and objects to use their creative skills. They will also develop skills in spreadsheet modelling and use this knowledge to collect, analyse and manipulate data and turn it into graphs and charts. Students build on their programming skills with an introduction to Small Basic which is the only programming language created specially to help students transition from block-based coding to text-based coding. They will design simple algorithms using loops and selection and develop their logical thinking.   This leads them logically into text-based programming with Python where they develop simple programs involving inputs and outputs and gradually become more complex in their execution. To finish their Discovery journey into Computer Science learners will be introduced to data science, being empowered by knowing how to use data to investigate problems and make changes to the world around them.

KS3 Computing Programme of Study:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	**Intro to Hardware & Binary**	**Using HTML to code webpages**	**E-Safety - AUP & DTP**	**Logo**	**Interactive Quiz Apps software**	**Microbit & Intro to CyberSecurity**
Students learn how to:	Humans use symbols to record, process and transmit information. Introduce binary digits to your learners as the symbols computers use to perform these tasks and focus on the representation of text and numbers	Learners will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML	This unit will give students an understanding of how to communicate information through use of publishing software. They will be designing an e-safety poster for the school for KS3 students - acceptable use in schools (AUP). They will use a range of DTP features such as: MasterPage, layers, sourcing copyright free images. Students will use Image Manipulation software (Fireworks) to design an appropriate e-safety logo and export in appropriate format. Students will understand how to keep themselves safe online and	In this unit students are introduced to flowcharts as a diagram to represent a sequence of instructions. They progress to using a screen turtle and controlling it with a series of commands using logic and prior knowledge to draw a series of shapes. They will use loops to create an algorithm to draw specific shapes.	In this unit students will develop their knowledge understanding and use of PowerPoint to design and create an interactive quiz using a range of features: hyperlinks, hotspots, SlideMaster, transitions, animations, triggers,	This unit applies and enhances the learners' programming skills in a new engaging context: physical computing, using the BBC micro:bit. In the first half of the unit, learners will get acquainted with the host of components built into the micro:bit, and write simple programs that use these components to interact with the physical world. This unit takes learners on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. The learners will start by considering the value their data holds and what

			how to keep others safe. They will know who to report to and how to recognise inappropriate content or contact and what to do about it.		organisations might use it for. They will then learn about social engineering and other common cybercrimes, and finally look at methods to protect against these attacks.
Assessment			**End of unit assessment**		**End of year assessment**

Year 8	Networks from Semaphores to Internet	Databases	Scratch		Going Visual & Audio
Students learn how to:	This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols.	This unit introduces students to using and creating a database to enter data efficiently with a minimum of errors and carry out some basic analysis of data to answer questions (queries). They will use their queries to generate reports on a theme of Top Trumps.	The aim of this unit and the following unit (Programming II) is to build learners' confidence and knowledge of the key programming constructs. Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration.	This unit begins right where 'Programming I' left off. Learners will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills. Learners will learn how to create their own subroutines, develop their understanding of decomposition, learn how to create and use lists, and build upon their problem-solving skills by working through a larger project at the end of the unit.	Learners will focus on making digital media such as images and sounds, and discover how media is stored as binary code. They will draw on familiar examples of composing images out of individual elements, mix elementary colours to produce new ones, take samples of analogue signals to illustrate these ideas, and then bring all these things together to form one coherent narrative.
Assessment		**End of unit assessment**			**End of year assessment**

Year 9 - IT	Graphics - Photopea	Enterprise	Small Basic	Python Programming	Modelling Data - Spreadsheets	Data Science & EOY Assessment
	The unit includes a brief introduction to the interface, working with panels and the History window; creating a new document; guides; document colour; Open & Place; transform/move images; creating basic shapes; adding and formatting text including layer styles; Smart Objects, simple animated gifs,	This unit begins by introducing students to the purpose of business activity, and the concept of enterprise and entrepreneurship. The relationship between risk and reward is considered and the impact of managing these variables on business activity is analysed. The unit explores the reasons why new business ideas come about and how new ideas are developed. The unit concludes with a topic focussed on the dynamic nature of the business environment.	In this unit learners will design simple algorithms using loops and selection i.e. if statements. They will declare and assign variables and use relational operators within a loop to govern termination. They will use logical reasoning to predComputing outcomes and detect and correct errors i.e. debugging, in algorithms.	introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.	Learners will be introduced to the beautiful world of spreadsheets and the concept of cell referencing! They will collect, analyse, and manipulate data, before turning it into graphs and charts. Data is beautiful! Give examples of how computer models are used in the real world Format a simple spreadsheet model Use simple formulae and functions Name cells in a spreadsheet model Use a simple spreadsheet model to explore different "what if" scenarios Create a basic pie chart to display results	Learners will be introduced to data science, and by the end of the unit they will be empowered by knowing how to use data to investigate problems and make changes to the world around them. Learners will be exposed to both global and local data sets and gain an understanding of how visualising data can help with the process of identifying patterns and trends.
Assessment	**End of unit assessment**			**End of programming units assessment**		**End of year assessment**

Year 9 Computing provides an introduction to programming through Python. It introduces networks and how computer hardware works. Background information on databases, spreadsheets and websites is explored which gives students the basic building blocks for computer science.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 9 - Computing	**Understanding Computers**	**Introduction to Python**	**Networking**	**Databases**	**HTML**	**Python next steps**
Students learn how to:	Distinguish between hardware and software Give examples of computer hardware and software Draw a block diagram showing CPU, input, output and storage devices Name different types of permanent storage device Suggest appropriate input and output devices for a simple scenario Explain what RAM and ROM are used for Show how numbers and text can be represented in binary Explain the impact of	Run simple Python programs in Interactive and Script mode Write pseudocode to outline the steps in an algorithm prior to coding Write programs using different types of data (e.g. strings and integers) Correctly use different variable types (e.g. integer and floating point), assignment statements, arithmetic operators Distinguish between syntax and logic errors and be able to find and correct both types of error Describe the purpose of	State that the Internet is a wide area network and the world wide web is part of the Internet Define the meaning of the terms "domain name", http protocol Explain the basic principle of packet switching Give examples of LANs and WANs State three different network topologies Describe what is meant by a client-server network and state some of its advantages State why some	Creating the database Creating a table by importing data Setting validation rules to reduce errors Sorting and filtering the data Creating queries including: Logical queries (AND, NOT, OR) Fuzzy search queries Parameter value queries Range queries ("greater than", "less than" or "between") Calculations in queries Collecting and storing pComputingures	Write HTML code to create a simple web page and display it in a browser Write CSS to define the styles used in a web page Create a simple navigation system using HTML Use a design to create a template for a web page using HTML Create their own multi-page website Insert text, images and links on their web pages	Use data types correctly and convert between them when necessary Write programs that use a loop to repeat a section of code Write programs that use lists (known as 'arrays' in some languages) Create and use a function with or without parameters Find and debug syntax errors Look at a given section of code and describe its function

	future technologies	pseudocode in designing algorithms Use comments to document their programs and explain how they work Write an error-free, well-documented program involving sequence, selection and iteration, but with some help given	transmissions are encrypted, and use a simple algorithm to encrypt and decrypt a message	Creating a data entry form Arranging the data entry fields Adding navigation buttons Making your form open automatically on startup Creating a Columnar report (showing one record at a time) Creating a tabular report (showing many records at a time) Exporting your reports as PDF documents		
Assessment	**End of unit test**	**End of unit test**	**End of unit test**	**End of unit test**	**End of unit test**	**EOY Test**