



Year 7

IT and Computer Science

AUTUMN TERM

- **Introduction to ICT & Computer Science** - Students learn to log into the school network confidently. They will be introduced to the school email system and they will know what makes a strong password. Students will practice skills on the computer that will increase their digital literacy skills including, touch typing, word processing and file management.
- **Adventure story** - This unit encourages pupils to think in a systematic and logical order in a fun and engaging manner. They plan, create and evaluate an interactive story using a presentation package. This project encourages students to use computational thinking skills to visualise a route through a problem which is the basis for programming and problem solving.

SPRING TERM

- **Spy School**- This unit introduces spreadsheets including basic formula, the Sum, Average, Min and Max functions, replicating formulae with AutoFill, creating graphs and absolute and relative cell references. Students will also look at further functions and advanced features such as conditional formatting.
- **Flowol** – This unit allows students to develop logical reasoning and problem-solving skills. Students will design and program flowcharts to solve problems and simulate real life scenarios. Students will learn the programming concepts input, outputs, variables and sub routines.

SUMMER TERM

- **Clear Messaging in digital media**- Students will create, reuse, revise and repurpose digital artefacts for a given audience. They will understand a range of ways to use technology safely, respectfully, responsibly including protecting their online identity. Students will create a brand for a charity and will complete a pitch to their peers.
- **The Arcade**- In this unit pupils will be introduced to the programming environment and begin by reverse-engineering some existing games. They will then progress to planning and developing their own games, learning to incorporate variables, procedures (using the Broadcast function), lists and operators. They should be able to create a fully working game with lives, scoring and some randomisation of objects.

BUILDING EXCEPTIONAL YOUNG MEN



Year 8

IT and Computer Science

AUTUMN TERM

- **Introduction to ICT & UCSER** – This unit covers the necessary basic knowledge to use computers safely, effectively and responsibly. Pupils begin by looking at file management and security. The unit then moves on to e-safety, cyber-bullying, phishing etc, and online profiles to give pupils a better understanding and awareness of using social media. The functionality and operation of email and search engines and how to use them effectively are also covered.
- **Technology** -This unit introduces pupils to some technological terminology and the history of computing. They will learn about hardware including input, output and storage devices. They will also look at software including operating systems, applications software and utilities software. They will learn about the main phases in the development of computers from the abacus to the present day and finally the development of the internet and cloud computing.

SPRING TERM

- **Computer Crime**- This unit covers some of the legal safeguards regarding computer use, including overviews of the Computer Misuse Act, Data Protection Act and GDPR and Copyright Law and their implications for computer use. Phishing scams and other email frauds, hacking, “data harvesting” identity theft and safe use of social media are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed.
- **Introduction to Python** – This unit introduced the students to the high-level programming language, Python. The focus is on getting pupils to understand the process of developing programs, the importance of writing correct syntax, being able to formulate algorithms for simple programs and debugging their programs.

SUMMER TERM

- **Understanding Computers**- Pupils will revise some of the theory on input and output covered in previous learning and continue to look at the Input-Process-Output sequence and the Fetch-Decode-Execute cycle through practical activities. Pupils will then look at some simple binary to decimal conversion and vice versa. This will be followed by some simple binary addition.
- **Business Documents** - In this unit pupils will take on a project. They will plan develop and create a business idea. They will the produce several business documents to advertise their business. Students will create and idea, logo, business card and sales presentation.

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Year 9

IT and Computer Science

AUTUMN TERM

- **Intermediate Python** – The unit is an introduction to Python, a powerful but easy-to-use high-level programming language. The focus is on getting pupils to understand the process of developing programs, the importance of writing correct syntax, being able to formulate algorithms for simple programs and debugging their programs. The pupils' final program is an adventure story based in python. Students will plan and design the game making sure the syntax is error free.
- **Data Representation** -In this unit pupils will learn about binary, denary, hexadecimal, bitmaps, metadata, sound files, sample rates, assembly language and machine code. They will practise converting to and from Binary to Denary, Denary to Hex and work their way through a series of binary addition.

SPRING TERM

- **Networks**- Pupils will learn about what a network is and why they are used, LANs and WANs the bus, ring and star topologies, hardware used to connect to a LAN, peer-to-peer and client-server networkers, IP addresses, MAC addresses, Domain Name service, how data is sent using packets, HTML, file types, lossy and lossless file compression and finally they will create group presentations on the main ways of securing a network and the main policies needed for managing and maintain a network.
- **User Interface Design** – In this unit students will plan design and develop a user interface for a given scenario. They will research into different User interfaces and compare the differences between GUIs, Menu, text based and sensors. They will then decide which User interface they will then create.

SUMMER TERM

- **Spreadsheets Modelling**- The unit is centred around creating a financial model for a TV show. Pupils start by looking at different types of models and then use basic spreadsheet techniques to create and format a simple financial model to calculate the expected income from viewers' voting. The model is then extended to include sales from merchandising, with the introduction of "what if" scenarios. Finally, the pupils create a seating plan, book seats and calculate income from seat sales. Spreadsheet features covered include SUM, MAX, IF and COUNTIF functions, cell naming for absolute referencing, conditional formatting, validation, charting and simple macros.
- **AI and Machine Learning** - Students are introduced to the concept of artificial intelligence, exploring its origins, history, and key developments. Students then study machine learning and how it is used in modern applications, including how rules and data are used in AI decision making. They also examine how intelligence can be measured in both humans and computers, including an introduction to the Turing Test.

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