Computing KS3 – Year 7

The students will be introduced to the IT skills they will need to support other subjects across the curriculum and will be introduced to programming, algorithms, some more complex elements of software packages and an understanding of computer hardware and how it works.

Term 1
- An introduction to KES Systems, OneDrive, Email, word and word processing, typing hardware and inputs/outputs
- E-safety, Word and Artificial intelligence
- Bebras competition
- Binary – pupils will be able to convert binary to denary and add two binary numbers

Term 2
- Have an understanding of hardware and how the internet works, they will be able to name and describe the components within a PC and networking.

Term 3
- Introduction to databases – students are taught to setup a structure, enter data and interrogate the data.
- PhotoShop – image manipulation, students are taught how to take an image and change it for different reasons.
- Introduction to scratch programming, preparing them for using python in Year 8

Computing - Year 8

Throughout Year 8 students will continue to study IT/Computing and build upon the skills they have been introduced to in Year 7. This year is used to develop more programming skills, including the introduction of textual programming.

- Continue with scratch and students make a game with a specific criterion
- Turing Tumble – students use the mechanical computer using bits/interceptors/cogs and solve puzzles
- Microbit Projects - Students will be introduced to using python programming language. They are introduced to programming basics and then will develop these skills to create bespoke projects using the Microbit technologies.
- This year pupils also embarked on bleep programming with Lua language with the university of Sheffield – developing their skills using music
- E-safety
- App development
- Photoshop

Computing Year 9

There will be a deeper focus on programming skills and a look at some of the GCSE theory to give the students a good insight into the GCSE Computer Science and preparation for B-Tec DIT syllabuses.
- Graphics creating logo for their app
- Cybersecurity
- Careers in computer science
- Spreadsheet Modelling – Students will complete a series of lessons looking at the basic and more complex functions of spreadsheet modelling
- Python Programming using pygame - Students to build upon their skills through completing challenges

KS4 and KS5

- Develop their understanding of current and emerging technologies,
- Understanding of how they work and apply this knowledge and understanding in a range of contexts acquire and apply some knowledge, some technical skills and an understanding of the use of algorithms in computer programs to solve problems using programming use their knowledge and understanding of computer technology to become independent and discerning users of IT,
- able to make informed decisions about the use and be aware of the implications of different technologies acquire and apply creative and technical skills,
- knowledge and understanding of IT in a range of contexts
- develop computer programs to solve problems
- develop the skills to work collaboratively!
- Systems Architecture – the components that make up a working computer system
- Network topologies, protocols and layers – how networks can be set up and the rules used to govern communication
- System security – a look at the threats and methods of prevention used to keep data in networks safe
- System software – the difference between utility software and operating system software and the importance of them to modern day computer systems
- Programming techniques - Using Python including skills such as sequencing, selection, and iteration, saving to external text files, reading, and writing data, lists, dictionaries and SQL
- Computational logic – logic gates and how decisions are made by a computer system
- Translators and facilities of languages – high- and low-level programming languages, assembly language and machine code
- Data representation – binary and hexadecimal representation of numbers, text, images and sound
- At KS4 - Students will complete a 20-hour programming project where they will have the opportunity to showcase their programming skills. Students will produce a portfolio of evidence to show their analysis skills, designs skills, programming and testing skills and finally their reflection skills. This is assessed in the examination.

KS5

Pupils embark on their own journey through their programming project at KS5 – they choose their complexed idea and work through each of the elements, analysis, design, development and testing and evaluation.

Skills developed are:-

- Resilience
- Knowledge of different programming languages
- Understanding what is a success criteria
- Independence
- Investigate stakeholders
- Research existing systems
- Develop flow chart on new system
- Create and carry out test plan/testing and carry out remedial testing
- Evaluate product based on success criteria
- Provide detailed analysis on limitations of the system