

COMPUTING AND ICT

KS3 Curriculum

What does this course involve at Key Stage 3?

Computing is a discrete subject at Key Stage Three. The programme of study is updated frequently to keep pace with the latest developments in hardware, software, programming languages and trends. Two of the IT suites are set aside for these lessons. Other Departments, who take responsibility for developing and applying the skills pertinent to their own subject, have access to further IT suites with a range of software to facilitate the delivery of the ICT content.

To support students in their homework and extended study we advise on a number of useful websites which support the development of practical and programming skills and understanding theory. Students also have the opportunity of accessing the resources in the computing suites through computer club held at break times. This enables the students to catch up on work missed, reinforce their knowledge through extension work or use this opportunity to explore educational games which are not permitted during normal lessons.

An extensive range of software is available in school including; *Microsoft Office Suite, Python (32-bit), Python MU, Python SQL, Python ODBC SQL, Scratch, PyGame, Game maker, Adobe Photoshop* and *Audacity*. There is ample scope for exploration of different tools and methods of working. In addition to this, the department also exploring the possibility of using online learning environments such as Codecademy.

Year 7 students learn to:

- selectively access the Internet as an effective research tool
- use email appropriately and professionally
- understand and apply the principles of e-safety within current trending matters
- understand computational logic and be able to apply the concept
- work with planning algorithms using various methods
- plan, design and create a program using a visual programming software
- work with data modelling with a real-life problem scenario
- explore the fundamentals of Input, Storage and Output devices
- practically assemble computer hardware
- install computer software
- research the latest trends in the current technology market
- plan, design and create a program using a textual programming software on scratch

Year 8 students learn to:

- explore and understand the functioning of Computer Networks
- discover how the world wide web works
- practically identify and disassemble and reassemble the internal components of a PC
- understand the health and safety issues when working with Computers
- use python programming to operate a motor kit
- develop an App through working with people from industry
- understand algorithms and computer logic in depth
- apply their computational thinking to creating a game using Scratch
- understand Human Computer Interaction concepts
- learn and use HTML syntax to create their own website
- implement a working database on a given scenario

KS4 Curriculum

Years 9, 10 & 11

Students will develop their understanding of computer systems, hardware, software, communications, networks and programming.
Students would benefit from having a strong mathematical and logical background, ideally achieving secure or above at the end of KS3.
Grades 1 to 9 are awarded and assessment consists of 1 non exam assessment (NEA) and 2 written examinations.

The topics covered over the course are listed below:

Unit 01: computer Systems

- Systems architecture
- Memory
- Storage
- Wired and wireless network
- Network topologies, protocols and layers
- System Security
- System software
- Ethical and legal issues

Unit 02: Computational thinking, algorithms and programming

- Algorithms
- Programming techniques
- Robust programs
- Computational logic
- Translators and facilities of languages
- Data representation

NEA programming project (03/04)

- Programming techniques
- Analysis
- Design
- Development
- Testing and evaluation conclusions

