



Curriculum Overview – Computing

The computing curriculum has been designed to develop students' understanding of the use of computers and the computational thinking concepts that they have been developing at KS2. There is an emphasis of the skills and knowledge specific to the subject, this is balanced with reflections on the integration of technology in our wider society, with the pros and cons of the use of digital devices at the forefront. The aim is to give students the opportunity to embrace the use of technology where appropriate, but to have a critical view and to challenge some of the assumed concepts. Providing the students with enough knowledge to make informed choices about their own and others use of technology.

The themes of the computing curriculum are:

- Computational thinking
- Computational attitude
- Digital hardware
- Programming
- New technology
- Impact on wider society

During KS3 units have been carefully selected to provide a smooth transition from KS2. The curriculum begins by developing the computing skills and encouraging enjoyment of the subject in a context familiar to the students. Specifically, the use of block programming in the MicroBit and Kodu units. In Year 8 we start by looking at digital devices in a wider context by designing a mobile phone and exploring some of the techniques that are used in manufacturing, such as CAD/CAM and the use of a 3D printer. We then use this unit as a stepping stone to look at the hardware used to create digital devices and explore the components of a computer. We then contextualise our understanding of the digital

world and of our own personal use of devices by focusing on our digital reputation. In Year 9 we start to formalise students' understanding of the computational concepts by focusing on a scripting language, Python.

Throughout Key Stage 3 there are opportunities for stretch and challenge for students that are interested or able in the subject. There is a challenge wall in E109 and the school participates in national competitions. There are lunchtime clubs that have included robotics club Gamemaker club and coders club.

Those students that choose to continue computing into KS4 follow the OCR GCSE course. This has two overarching themes, that of the theoretical knowledge associated with the subject and the practical aspects of programming. Whilst the bulk of the curriculum in Year 10 is theoretical knowledge, the curriculum has been designed so that students can practise their programming skills as often as possible. The scheme of work is structured so that each of the units can be taught independently by members of staff, but also integrate and often reflect knowledge and understanding from other units.

Those that continue to follow computing into Year 12 study the OCR syllabus. This course has the same broad themes of theoretical knowledge and practical application. The course has been designed so that students have as much opportunity, as possible, to put their knowledge to the test by programming solutions to problems. The A Level follows the same general aspects of the GCSE course, but looks at each topic in far greater depth and broadens students' knowledge by expanding into new topics, such as the use of databases. The aim of the A Level is not only to foster a passion for the subject, but to support students in their choice of further study or career beyond school, whether that be in a computing field or not. In Year 13 the course turns to one much more focused on the practical, programming applications of the subject, which helps to support students through their programming project.

Key Stage 3

Year 7	Year 8	Year 9
Scratch	Game Maker	Python Programming
Kodu	Google Sketchup	
BBC:Microbit	Components of a computer	
Internet Safety	HTML & CSS	
	Flowol (Robotics)	
	Digital Reputation	
	Logic Gates	

Key Stage 4 – GCSE Exam Board OCR J276

Year 10	Year 11
Systems Architecture	Algorithms
Memory	Programming techniques
Storage	Producing robust programs
Wired and Wireless Networks	Computational logic
Network topologies, protocols and layers	Translators and facilities of languages
System security	Data representation
Systems software	
Ethical, legal, cultural and environmental issues	

Key Stage 5 – A Level/Pre U Exam Board: OCR H446

Year 12	Year 13
Components of a computer and their uses	Elements of computational thinking
Software and software development	Problem solving and programming
Exchanging data	Algorithms
Data types, data structures and algorithms	Programming project
Legal, moral, cultural and ethical issues	