Computing

Curriculum Intent

Key Stage 3

Key stage 3 lessons are designed to empower students and enable them to become confident individuals, effective contributors and successful learners.

Year 7 begins with computational thinking, flowchart design and implementation. This gives our pupils a solid foundation in the underlying principles used in computer programing. This then leads to using simple instruction being crated from flowcharts and used in JAVA to move simple characters and objects. The pupils will learn the basics of linear scripting by writing simple constructs in the Python programming language. Pupils then learn about computer graphics.

Year 8 begins with pupils developing an understanding of Object Oriented Programming. This provides them with greater confidence in handling modern complex languages such as JAVA. Students then undertake a set of linked tasks designed to give them a wider understanding of web development.

Year 9 begins with further widening their language base by learning to program in C#. Pupils learn how to use spreadsheets to give them useful skills across the curriculum and in industry. This prepares them for coding at GCSE level, and will give them the opportunity to see that many programming languages share a common base. They also gain an appreciation of modern developing industries and technologies such as the Internet Of Things and Artificial Intelligence.

Key Stage 4

Pupils in Year 10 start by developing the programming skills to deepen their understanding of program flow and this prepares them for undertaking a formal controlled assessment in Year 11. They develop the knowledge of Computer Science in line with the AQA specification. Furthermore they complete assessment papers after each unit in preparation for the exams, highlighting weakness when needed. Pupils in Year 11 initially complete their controlled assessment, then continue deepening their understanding of the exam specifications.

Key Stage 5

Pupils in Key Stage 5 begin with an overview of programming concepts. They then start learning the theory behind hardware, software and networking to a secure level. This prepares them for higher education in any Computing field, giving them a clear advantage over any student who has not undertaken this course.

Curriculum Implementation

Key Stage 3

In KS3 pupils have two Computing lessons a fortnight in Year 7 and three lessons a fortnight in Year 8 and 9.

Year 7	Year 8	Year 9
• Logical reasoning • Oxford computational thinking challenge • Flowcharts and basic algorithms • Hardware devices • Introduction to java • Graphics • Python • Modern games and application design	• Mid level Object Oriented Programming • Application design • Logo design • HTML • CSS • JavaScript	• Computational thinking • C# coding. • Mobile App development • Architecture of computer systems and networks • Representing information • The design of algorithms and pseudo code • Cryptography • Javascript animation and HTML5

Key Stage 4: GCSE (AQA)

Pupils will begin working with real-world programming and provides a good understanding of the fundamental principles of computing.

Year 10	Year 11
• Fundamentals of algorithms • Programming • Fundamentals of data representation • Computer systems	• Programming project • Fundamentals of computer networks • Fundamentals of cyber security • Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy • Aspects of software development

Key Stage 5: A Level (AQA)

Years 12 and 13

At A Level the pupils will undertake the following components:

- Fundamentals of programming
- Fundamentals of data structures
- Systematic approach to problem solving
- Theory of computation
- Fundamentals of data representation
- Fundamentals of computer systems
- Fundamentals of computer organisation and architecture
- Consequences of the uses of Computing
- Fundamentals of communication and networking
- In the third term of year 12, the pupils choose a programming project, which teaches them skills in planning and iterative implementation and testing.