Curriculum Overview

Curriculum Area: Computing Year: 10

Curriculum covered

Autumn Term

All pupils will begin by studying; The purpose of the CPU & Von Neumann Architecture, Common CPU components and their functions and explore the Fetch-Execute cycle. Pupils learn the use of data types such as Integer, Real, Boolean and character and casting to strings. They will explore the fundamentals of programming and the use of variables, constants, operators, inputs, outputs, and assignments; using the three basic programming constructs of Sequence, Selection, and Iteration to control a program. The term will end with a focus on memory and secondary storage.

Spring Term

All pupils study the binary number system and why data needs to be converted into binary and the units of data storage and calculation of Data capacity and compression. Pupils learn to convert positive denary whole numbers to binary numbers (up to and including 8 bits) and the use of hexadecimal numbers and binary shift. They will learn how data is stored in images and sound and how sound is sampled. They explore the use of records to store data and SQL to search for data and the use of arrays to select it. They consolidate with programming fundamentals.

Summer Term

All pupils will learn the three principles of computational thinking: Abstraction, Decomposition and Algorithmic Thinking. They will learn how to design, create, and refine algorithms and the use of flowcharts. They will explore the purpose of systems and utility software and the ethical, legal, cultural, and environmental impact of digital technology in society. They consolidate with a practical programming project.

Internal Assessment

All pupils will be regularly assessed throughout each area of study. All pupils will complete practice exam assessment questions either during class or as part of homework.

All pupils will complete a Mock Paper 1 on Computer Systems and a Mock Paper 1 on Computational Thinking and Algorithms in Term 1.

Exam Board/Exam Paper Requirements/% Weighting Key dates (mocks and final exams

J277/01: Computer systems

This is a compulsory component. It is worth 80 marks representing 50% of the total marks for the GCSE (9–1).

This component is an externally assessed written examination testing AO1 and AO2.

The examination lasts 1 hour 30 minutes.

J277/02: Computational thinking, algorithms and programming

This is a compulsory component. It is worth 80 marks, representing 50% of the total marks for the GCSE (9–1).

This component is an externally assessed written examination testing AO1, AO2 and AO3.

The examination lasts 1 hour 30 minutes and is formed of two sections.

Practical Programming skills will be assessed in Component 2 of the qualification

This is evidenced by way of a portfolio of study in school.

Helpful resources/revision guides/websites/exam preparation

Online - each component has a Synergy revision section on the course for all pupils.
Boost online learning is used to provide selected lessons and assessments including exam questions.
SENECA online learning is used to supplement Computer Science theory and eRevision is used for exam preparation and homework.

All pupils are issued with revision guides as an integral part of the course and used in lessons:
CGP revision books are provided by the department as follows:
GCSE OCR Computer science Complete revision and practice
GCSE OCR Computer science Revision guide
GCSE OCR Computer science Exam practice workbook
GCSE OCR Computer science 10-minute tests