Computer Science

Course Length: Studied over two years
Examination Board: OCR
Course Leader: Mr R Bowbanks (bowbanks@queenelizabeths.derbyshire.sch.uk)

Why Study Computer Science? The UK has the second-biggest ICT sector in Europe (after Germany), worth an estimated £81bn. Every industry uses computers so naturally computer scientists can work in any industry. Problems in science, engineering, health care, and so many other areas can be solved by computers. It's up to the computer scientist to figure out how, and design the software to apply the solution.

The most important aspect of computer science is problem solving, an essential skill for life. Students study the design, development and analysis of software and hardware used to solve problems in a variety of business, scientific and social contexts.

Course Content

Component 01: Computer systems

This component will introduce students to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at software development, data types and legal and ethical issues. It is expected that learners will draw on this underpinning content when studying computational thinking, developing programming techniques and devising their own programming approach in the programming project component.

Component 02: Algorithms and programming

This component will incorporate and build on the knowledge and understanding gained in the computer systems component (01). In addition, students should: understand what is meant by computational thinking, understand the benefits of applying computational thinking to solving a wide variety of problems, understand the principles of solving problems by computational methods, be able to use algorithms to describe problems and be able to analyse a problem by identifying its component parts.

Component 03: Programming project

Students will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Students are expected to apply appropriate principles from an agile development approach to the project development.

Assessment

Comp.	Title	Assessment	A-Level
Component 01	Computer systems	Written Exam Paper: 2.5hr	40%
Component 02	Algorithms and programming	Written Exam Paper: 2.5hr	40%
Component 03	Programming Project	Non-Exam Assessment	20%