

A-Level Computer Science

(Eduqas Specification)



This academic course requires students to have strong problem-solving skills, a logical mind, a genuine interest in computer programming and a willingness to learn and practise skills independently.

This course is designed to encourage students to develop:

- an understanding of, and the ability to apply, the fundamental principles and concepts of computer science, including abstraction, decomposition, logic, algorithms and data representation
- the ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so
- the capacity for thinking creatively, innovatively, analytically, logically and critically
- the capacity to see relationships between different aspects of computer science
- the ability to articulate the individual (moral), social (ethical), legal and cultural opportunities and risks of digital technology

Computers are widely used in all aspects of business, industry, government, education, leisure and the home. In this increasingly technological age, a study of computer science, and particularly how computers are used in the solution of a variety of problems, is not only valuable to the students themselves but also essential to the future well-being of the country.

Computer science integrates well with subjects across the curriculum. It demands both logical discipline and imaginative creativity in the selection and design of algorithms and the writing, testing and debugging of programs; it relies on an understanding of the rules of language at a fundamental level; it encourages an awareness of the management and organisation of computer systems; it extends the students' horizons beyond the educational environment in the appreciation of the effects of computer science on society and individuals. For these reasons, computer science is as relevant to a student studying arts subjects as it is to one studying science subjects.

The course consists of three components that will be studied over the two years that comprises of:

Component 1: Programming and system development.

Written examination, accounting for **40%** of the qualification.

This component investigates programs, data structures, algorithms, logic, programming methodologies and the impact of computer science on society.

Component 2: Computer Architecture, Data, Communication and Applications

Written examination, accounting for **40%** of the qualification.

This component investigates computer architecture, communication, data representation, organisation and structure of data, programs, algorithms and software applications.

Component 3: Programmed Solution to a Problem (NEA)

Non-examined assessment, accounting for **20%** of the qualification.

Students will discuss, investigate, design, prototype, refine and implement, test and evaluate a computerised solution to a problem chosen by themselves, solved using original code.

This is a substantial piece of work, undertaken over an extended period of time.

The work for Component 3 must include the development of software in a general-purpose high-level language.

GCSE minimum requirements:

Mathematics - Grade 6

Computer Science (if taken) - Grade 6