Computer Science

Advancesin computing are transforming the way weworkandtheComputerScience qualification from the AQA exam board offers an up-to-date syllabus that focuses on the knowledge, understanding and skills students need to progress to higher education or thrive in the workplace. This replaces older courses such as AS/A2 Computing. In addition to programming(using Python, or one of the other approved languages) and learning the fundamentals of computer systems and architecture, students are taught a systematic approach to problem solving. The course involves a strong mathematical element including the use of Boolean algebra.

Course Content

1 Fundamentals of programming
2 Fundamentals of data structures
3 Systematic approach to problem solving
4 Theory of computation
5 Fundamentals of data representation
6 Fundamentals of computer systems
7 Fundamentals of computer organisation and architecture
8 Consequences of uses of computing
9 Fundamentals of communication and networking
10 Fundamentals of databases
11 Big Data
12 Fundamentals of functional programming
13 Fundamentals of algorithms
14 Non-exam assessment - the computing practical project

Assessment

Paper 1 – 2 ½ hours on-screen exam, 40% of A Level
This paper tests a student's ability to program, as well as their theoretical knowledge of computer science from subject content 1-4 and 13 above. Students answer a series of short questions and write/adapt/extend programs in an Electronic Answer Document provided by the exam board.

Paper 2 – 2.5 hour written exam, 40% of A Level
This paper tests a student's ability to answer questions from subject content 5-12 above with a series of short-answer and extended-answer questions.

Non-exam assessment ('coursework') – 20% of A Level
This assesses students' ability to use the knowledge and skills gained through the course to solve or investigate a practical problem. Students will be expected to follow a systematic approach to problem solving, as shown in subject content 3 above.

Entry Requirements

Students will require a minimum of a grade 6 Computing and Grade 6 in Maths. If no Computing GCSE, Grade 7 in Maths.

Progression

The analytical and problem solving skills developed through Computer Science AS and A Level make students highly employable both in and out of technology-related careers. Computer Science may lead to a job such as a software engineer, computer engineer or an Information Systems professional.

A Level Computer Science is an excellent qualification for anyone who is wishing to study computing and information technology at university. This is also true for related degree level study such as mathematics and engineering.