# AS/A Level Computer Science
# Course Outline

**Overview**

Advances in computing are transforming the way we work and the Computer Science 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 Structure & Summary of Unit Content**

The AS Level covers:

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

The A Level covers:

10 Fundamentals of databases
11 Big Data
12 Fundamentals of functional programming
13 Fundamentals of algorithms
14 Non-exam assessment - the computing practical project

It is possible for the AS and A Level courses to be taught concurrently, and A Level students will be able to sit the AS exams after the first year's teaching if they do not wish to continue with the full A Level.

**Assessment:**

**For AS Level:**

**Paper 1 – 1 ¾ hours on-screen exam, 50% of AS grade.**

This paper tests a student's ability to program, as well as their theoretical knowledge of computer science from subject content 1-4 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 – 1 ½ hours written exam, 50% of AS grade.**

This paper tests a student's ability to answer questions from subject content 5-9 above with a series of short-answer and extended-answer questions.

**For A Level:**

**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 Qualifications**

Students will require a minimum of a grade 6 in GCSE Mathematics. Grade 6 or higher in GCSE Computing, or its equivalent, is also desirable.

**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 are outstanding qualifications 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.