

“Computers do the calculating to allow people to transform the world.”

Conrad Wolfram

The AS and A2

In the AS specification there are two units:

- **Unit 1 Computing Fundamentals:** focuses on extending students knowledge of how computers work, and the technical hardware and software that makes a computer work
- **Unit 2 Programming Techniques and Logical Methods:** focuses on the more theoretical aspects of computing, including studying algorithms, efficiency, and big-O notation.

The A2 specification builds on the content of AS, and extends it with more practical computing:

- **Unit 3 Advanced Computing Theory:** focusing on computational thinking, what can be computed, programming and problem-solving including communication and networking.
- **Unit 4 Computing Project:** This is an internally assessed unit, with candidates required to complete a report on a computer-based programmed solution to a problem solving exercise of their choice.

SPEAK TO A MEMBER OF STAFF FOR MORE INFORMATION.



Computer Science

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Computer Science OCR A-Level



- Computational Thinking
- Algorithms
- Practical Problems
- Coding in Python
- Computer Fundamentals
- Theoretical Computer Science

Ever wondered what the best way to solve a Rubik's cube or a Sudoku puzzle is? Computer Scientists love puzzles & logical thinking tasks like these - after all, the ultimate embodiment of logical thinking is the computer. So whilst the subject is called 'Computer Science', it involves much more than just computers or 'IT'. (It's a bit like calling English 'writing science': there's so much more to English than writing.)

OCR Computing A-Level

The course is not about learning to use tools or just training in a programming language. Instead the emphasis is on computational thinking. Computational thinking is a kind of reasoning used by both humans and machines.

THINKING COMPUTATIONALLY

Thinking computationally is an important life skill. Thinking computationally means using abstraction and decomposition.

The study of computation is about what can be computed and how to compute it.



Computer Science involves questions that have the potential to change how we view the world. For example, we may be computing with DNA at some stage in the future, with computer circuits made of genes. This leads to the question, does the natural world 'compute'?

Experimental Computer Science can be done with computers whereby we can learn more about the natural world by observing the emergent behaviour of a colony of interacting software agents in a simulation. Computing / Computer Science is about designing new algorithms to solve new problems.

CHALLENGES

In this sense Computer Science is no more about computers than astronomy is about telescopes. Many great challenges lie in the future for Computer Scientists to solve.



AS Level

(AS is worth 50% of A Level)

• **Unit 1:** 50% of AS; 100 marks; 1.5 hour written exam

• **Unit 2:** 50% of AS; 100 marks; 1.5 hour written exam

A Level

• **Unit 3:** 30% of A Level; 120 marks; 2 hour written exam

• **Unit 4:** 20% of A Level; 80 marks; Coursework

This course, with its emphasis on abstract thinking, general problem-solving, algorithmic and mathematical reasoning, scientific and engineering-based thinking, is a good foundation for understanding these future challenges.

SECURING YOUR FUTURE

This course has been designed for students who wish to go on to higher education courses or employment where knowledge of Computing would be beneficial. One can study Computing and go on to a career in medicine, law, business, politics or any type of science.



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