



# Computer Science

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## Course Aims

The course develops a range of skills, from requirements analysis and the design of algorithms through to implementation using a range of programming techniques. The course is excellent preparation for anyone looking to take Computer Science at degree level, or for anyone considering any kind of career in computing or related engineering or creative industries. Computer Science is a practical subject where you can apply the academic principles learned in the classroom to real-world systems. Through this qualification, you can develop:

- The capacity to think creatively, innovatively, analytically, logically and critically
- An understanding of the design and construction of computer systems
- The ability to apply computational thinking in a range of contexts to solve problems
- An appreciation of the power and limits of human and machine intelligence
- An understanding of the consequences of using computers, an awareness of emerging technologies and an appreciation of their potential impact on society.

## Qualifications and Qualities Needed

Where students have studied GCSE Computer Science a grade 6 is the minimum requirement for entry onto the course. In some cases however, students without a GCSE in Computer Science will need to have secured a grade 6 in Maths. We recommend you speak to a member of the faculty if you are unsure.

**Course Structure** - OCR A-level in Computer Science (H446). The course has three key components:

<b>Unit 1: Computer Systems (01)</b>	(Written Exam – 140 marks, 2.5 hours, 40% of A-level)
<b>Unit 2: Algorithms and Programming (02)</b>	(Written Exam – 140 marks, 2.5 hours, 40% of A-level)
<b>Unit 3: Programming Project (03/04)</b>	(Coursework – 70 marks, 20% of A-level)

**Unit 1: Computing Principles.** This covers the characteristics of contemporary systems architecture; software and software development; exchanging data; data types, data structures and algorithms; and legal, ethical, moral and cultural issues.

**Unit 2: Programming Techniques and Logical Methods.** This covers elements of computational thinking, programming techniques, software development methodologies and standard algorithms. A scenario will be given and you will be asked to design an appropriate solution.

**Unit 3: Programming Project.** Through coursework, you will gain an understanding of definition, investigation and analysis, system design, software development and testing and evaluating. Your project will be of your own choice, assessed internally and moderated by an external examiner.

## Future Pathways

This course is ideal for those wishing to follow a career in the field of Technology, Engineering or Design, for example; Aeronautical Engineer, Electronics Engineer, Software Engineer, Computer Programmer, Computer Analyst, Games Designer, etc. The qualification could also lead to Apprenticeship programmes or vocational courses at Colleges to further specialise in networking, telecoms and mobile devices, games design etc. Computer Science and Engineering are expected to continue as major growth industries, with many new positions created each year. A-level Computing combines well with Maths and Sciences options, but also with creative subjects such as Product Design, Media, Photography and Music Technology. Economics and Business would be another useful combination for budding Internet entrepreneurs and could lead to a pathway into Financial Services and Quantitative Analysis.

## Beyond The Classroom

We aim to enrich students learning beyond the classroom. We have developed close links with educational institutions, local and global companies, and relevant organisations to assist us in providing useful opportunities such as talks and lectures, hack days and other events for our students to participate in. Optional trips, such as the Silicon Valley and San Francisco trip, will provide students with a chance to further their interests and allow them to see first-hand where Computer Science can lead them.