



**COMPUTER
SCIENCE**

A-Level Course Information



Qualification: Advanced Level Computer Science

Exam Board: AQA

Subject Leader: Dr W. Grey

Entry Requirements:

Minimum Entry Requirements:

5 x 5s

4 in English and Maths

Subject Specific Entry Requirements:

6 in GCSE Maths

6 in Computer Science if taken at GCSE

(it is strongly recommended that students have taken GCSE Computer Science)

Why study Computer Science?

With exponential growth in the digital economy and the recent explosion of new technologies including mobile, cloud and big data, we have entered an age of unprecedented demand for skilled IT workers, particularly in the application development space. According to the European Commission, the number of IT jobs is growing at a rate of 100,000 a year.

Computer Science falls into three categories:

1. designing and building software or hardware
2. developing effective ways to solve computing problems, such as storing information in databases, sending data over networks or providing new approaches to security problems
3. devising new and better ways of using computers and addressing particular challenges in areas such as robotics, computer vision, or digital forensics (although these specialisations are not covered at AS/A-Level Computer Science)

What can I do with Computer Science after A-Level?

You could study a Computer Science course, Software Engineering or a Web Applications course at university. Other options might be Digital Forensics, Robotics, Game Design, Remote Sensing...the list of possible areas of study is long, and growing all the time as new applications for technology are invented.

What will I study?

Course Content:

- Fundamentals of programming
- Fundamentals of data structures
- Fundamentals of algorithms
- Theory of computation
- Fundamentals of data representation
- Fundamentals of computer systems
- Fundamentals of computer organisation and architecture
- Consequences of uses of computing
- Fundamentals of communication and networking
- Fundamentals of databases
- Big Data
- Fundamentals of functional programming
- Systematic approach to problem solving

The practical programming will be undertaken mostly using Python.

Assessment:

You will complete two written papers and a practical project.

Each paper is worth 40% of the overall grade.

The practical project, undertaken in Year 13, is worth 20% of the overall grade.

The course describes three assessment objectives, which are covered by the assessments:

AO1: You will be able to demonstrate knowledge and understanding of the principles and concepts of computer science, including abstraction, logic, algorithms and data representation.

AO2: You will be able to apply knowledge and understanding of the principles and concepts of computer science, including to analyse problems in computational terms.

AO3: You will be able to design, program and evaluate computer systems that solve problems, making reasoned judgements about these and presenting conclusions.