



HECKMONDWIKE  
GRAMMAR SIXTH FORM

# Computer Science

Exam Board: AQA

Computing is of enormous importance to the economy, and the role of Computer Science as a discipline itself and as an 'underpinning' subject across science and engineering is growing rapidly. The growth in the use of mobile devices and web-related technologies has exploded, resulting in new challenges for employers and employees. For example, businesses today require an ever-increasing number of technologically-aware individuals.

# Computer Science

## Career Opportunities

All areas of industry use computers and it is becoming more and more desirable to have the skills that a qualification in Computer Science brings. Computer Science careers include game design, software development, system designs, database administration, encryption specialist. Other careers that you can use Computer Science include scientific research, medicine, engineering, police and security services and many more.

## Course Content

### YEAR 12

#### Data Structures and Algorithms

This section looks at how computers store and use data and how instructions can be written in their most basic form to carry out tasks within the computer.

#### Computational Theory and Hardware

This section looks at what is happening within the computer including within the circuits when instructions are being processed.

#### Programming and Problem Solving

This introduction to programming and programming theory, looking at how to structure a program to solve specific tasks and also the importance of problem solving in the process of creating a programmed solution to a problem.

## Course Content

### YEAR 13

#### Databases and SQL

Databases are a major part of Computer Science and in this you will look at how data is stored and manipulated in large databases.

#### Data Structures and Algorithms

This further extends your study of data structures and looks at more complex data structures and algorithms used to solve more complex problems.

#### Programming

This extends your programming from year 12 and looks at advanced techniques such as object oriented and functional programming. You will be able to demonstrate your problem solving and programming skills in the Non-Exam Assessment unit.

#### Communications and Networks

This looks at how networks, including the Internet work and how devices communicate with each other.

## Assessment

### Paper 1

2hr 30min on screen exam on the fundamentals of programming, data structures and algorithms as well as the theory of computation.

(40% of total A level)

### Paper 2

2hr 30min written exam on computational theory, databases and functional programming.

(40% of total A level)

### Non-Exam Assessment

Assesses student's ability to use the knowledge and skills gained through the course to solve or investigate a practical problem.

(20% of total A level)

### Extended Learning

- British Informatics Olympiad
- Projecteuler.net
- Hackerrank.