

# A Level Computer Science

Board: OCR

Qualification: Advanced Level GCE in Computer Science – OCR H446

## What is the course about?

The course is designed for anybody who has an interest in the future of technology, and more importantly being a part of the development of technology. The A-Level in Computer Science not only teaches about all of the internal workings of a Computer System, but you will also learn about software development, data types and also explore the ethical and legal issues that surround technology, such as Ethical Hacking.

The course also relies heavily on using Computational thinking to solve complex problems – that means using decomposition, abstraction, pattern recognition and algorithmic thinking in order to develop, test and create your own programs including the use of object oriented programming to create high level quiz systems and Graphical User Interfaces.

Computer Systems (01)	Algorithms and Programming (02)	Programming Project (03)
<b>What's assessed:</b> <ul style="list-style-type: none"><li>- The internal workings of the CPU, data exchange, software development, data types and legal and ethical issues</li></ul>	<b>What's assessed:</b> <ul style="list-style-type: none"><li>- Use Computational thinking to solve problems</li></ul>	<b>What's assessed:</b> <ul style="list-style-type: none"><li>- Non-exam assessment</li><li>- Students will be expected to analyse a problem (10 marks), and design (15 marks), develop and test (25 marks), and evaluate and document (20 marks) a program. The program must be to solve it written in a suitable programming language.</li></ul>
<b>Assessed</b> <ul style="list-style-type: none"><li>• 2:30 Paper</li><li>• 140 marks</li><li>• 40% towards A-level</li></ul>	<b>Assessed</b> <ul style="list-style-type: none"><li>• 2:30 Paper</li><li>• 140 marks</li><li>• 40% towards A-level</li></ul>	<b>Assessed</b> <ul style="list-style-type: none"><li>• 70 marks</li><li>• 20% towards A-Level</li></ul>

## What will I study and what skills will I develop?

Students will study the following subjects. Strong skills and interests in subjects such as Computer Science, Maths and Graphics will be beneficial.

### Component 01: Computer systems

Students are introduced to the internal workings of the (CPU), data exchange, software development, data types and legal and ethical issues. The resulting knowledge and understanding will underpin their work in component 03.

It covers:

- The characteristics of contemporary processors, input, output and storage devices
- Types of software and the different methodologies used to develop software
- Data exchange between different systems
- Data types, data structures and algorithms
- Legal, moral, cultural and ethical issues.

### Component 02: Algorithms and programming

This builds on component 01 to include computational thinking and problem-solving.

It covers:

- What is meant by computational thinking (thinking abstractly, thinking ahead, thinking procedurally etc.)

- Problem solving and programming – how computers and programs can be used to solve problems
- Algorithms and how they can be used to describe and solve problems.

### Component 03: Programming project

Students are expected to apply the principles of computational thinking to a practical coding programming project. They will analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The project is designed to be independently chosen by the student and provides them with the flexibility to investigate projects within the diverse field of computer science. We support a wide and diverse range of languages.

#### How will I be assessed?

. The table shows the approximate weighting of each of the assessment objectives across all components.

Computer Systems (01)	Algorithms and Programming (02)	Programming Project
140 marks	140 marks	70 marks
2:30 hour paper	2:30 hour paper	Non-examined Assessment
40% of total A-level	40% of A-level	20% of A-level

#### Why might the course be right for me?

Anyone who is intrigued by future developments in technology. Clearly many of the jobs that you will be applying for will have some form of technological element to them, therefore, an A-Level qualification in Computer Science could push you above competition. Developing programs is essentially high level problem solving. The opportunity to progress in a programming language could be crucial for opening the door to dream careers.

#### Where can I go onto next?

Higher Education, Programming, Software Development, Network Management, IT Specialist, Network Forensics, Ethical Hacking, Games Development, Systems Analyst, Cyber Security