

## **Computer Science**

### **Examination Board: OCR**

#### **Why Should I study Computer Science?**

Studying Computer Science gives you the tools to understand and shape the technology that powers our world. You'll learn how computers work at a fundamental level, develop advanced programming skills in Python, and tackle real-world problems through logical thinking and creativity. The subject also encourages you to explore the ethical and environmental impact of technology, helping you become a thoughtful and responsible innovator.

#### **What will I learn about**

You will gain a deeper understanding of computer hardware, exploring how components like the CPU and memory interact within a system. Through Object-Oriented Programming in Python, you'll learn to design and implement more advanced, reliable software solutions. Building on ethical, moral, and social issues introduced at GCSE, the course encourages you to critically evaluate the impact of emerging technologies. You'll be supported in staying informed about the latest innovations and understanding their broader implications for society.

#### **Course Content and assessment**

H446 Computer Science A Level consists of three units: two examination units (worth 40% each) and a non-examination assessment (worth 20%).

##### *Component 1(40%)*

1. The characteristics of contemporary processors, input, output and storage devices.
2. Software and software development
3. Exchanging data
4. Data types, data structures and algorithms
5. Legal, moral, cultural and ethical issues

##### *Component 2 (40%)*

6. Elements of computational thinking
7. Problem solving and programming
8. Algorithms to solve problems and standard algorithms

##### *Component 3 (NEA 20%)*

The non exam assessment allows you to produce a complex coded solution to a problem that interests you. You will then analyse, design, develop and evaluate your solution, this can be on hardware or software but must be complex. Some examples of projects have been listed below:

- A financial or scientific or sporting or even a pet simulator.
- A fitness management system.
- An embedded system built onto a physical device e.g. a raspberry pi.
- Booking platforms and bidding websites with predicted and best price options
- A strategic game simulation
- Revision or media recommendation software.

| Level   | Components                                               | Requirements           | Duration           | Marks |
|---------|----------------------------------------------------------|------------------------|--------------------|-------|
| A Level | Paper 1: Computer Systems<br>Written examination         | Topics 1-5             | 2 hours 30 minutes | 140   |
| A Level | Paper 2: Algorithms & Programming<br>Written examination | Topics 6-8             | 2 hours 30 minutes | 140   |
| A Level | NEA                                                      | Programming<br>project |                    | 70    |

### **Application beyond school**

Computer Science will equip you with highly transferable skills such as logical thinking, problem solving, precision and creativity. These abilities are valued in careers such as cyber security, finance, engineering and even in healthcare. The course prepares you to adapt in fast changing technological environments. The subject opens doors to innovative industries and supports fields like Mathematics, Physics and Business to name a few.