

# KS5 Curriculum Overview 2023/24

## Department: ICT & Business - A Level Computer Science

### Description of KS5 Curriculum:

#### OCR A Level Computer Science (H446)

##### Components

- **Computer Systems (01)**  
The internal workings of the (CPU), data exchange, software development, data types and legal and ethical issues.
- **Algorithms and Programming (02)**  
Using computational thinking to solve problems.
- **Programming project (03)**  
Non-exam assessment.  
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.

##### Aims and learning outcomes

- The aims of this qualification are to enable learners to develop:
- An understanding of and ability to apply the fundamental principles and concepts of computer science including; abstraction, decomposition, logic, algorithms and data representation.
- The ability to analyse problems in computational terms through practical experience of solving such problems including writing programs to do so the capacity for thinking creatively, innovatively, analytically, logically and critically.
- The capacity to see relationships between different aspects of computer science.
- Mathematical skills.
- The ability to articulate the individual (moral), social (ethical), legal and cultural opportunities and risks of digital technology.

##### Assessment Objectives:

- A01: Demonstrate knowledge and understanding of the principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- A02: Apply knowledge and understanding of the principles and concepts of computer science including to analyse problems in computational terms.
- A03: Design, program and evaluate computer systems that solve problems, making reasoned judgements about these and presenting conclusions.

### Sequence of Learning:

KS5	Term 1 Content	Term 2 Content	Term 3 Content
Year 12	<b>Component 1:</b> <ul style="list-style-type: none"> <li>● 1.1.1 Structure and function of the processor</li> <li>● 1.1.2 Types of Processor</li> <li>● 1.1.3 Input, Output and Storage</li> <li>● 1.2.3 Software Development</li> </ul>	<b>Component 1:</b> <ul style="list-style-type: none"> <li>● 1.1.2 Types of processor</li> <li>● 1.2.1 Systems Software</li> <li>● 1.2.2 Application Generation</li> <li>● 1.2.4 Types of Programming Language</li> </ul>	<b>Component 1:</b> <ul style="list-style-type: none"> <li>● 1.3.1 Compression, Encryption and Hashing</li> <li>● 1.3.2 Databases</li> <li>● 1.3.3 Networks</li> <li>● 1.3.4 Web Technologies</li> </ul>

	<p><b>Component 2:</b></p> <ul style="list-style-type: none"> <li>● 2.1.1 Thinking Abstractly</li> <li>● 2.1.2 Thinking Ahead</li> <li>● 2.1.3 Thinking Procedurally</li> <li>● 2.1.4 Thinking Logically</li> <li>● 2.1.5 Thinking Concurrently</li> <li>● 2.2.1 Programming</li> <li>● 2.2.2 Computational Method</li> <li>● 2.3.1 Algorithms</li> </ul> <p><b>Component 3: Project:</b></p> <ul style="list-style-type: none"> <li>● Introduction and analysis of problem</li> </ul> <p>Assessment: exam questions from past papers</p>	<p><b>Component 3: Project:</b></p> <ul style="list-style-type: none"> <li>● Design of the solution</li> </ul> <p>Assessment: exam questions from past papers</p>	<p><b>Component 3: Project:</b></p> <ul style="list-style-type: none"> <li>● Developing the solution</li> </ul> <p>Assessment: exam questions from past papers</p>
<p><b>Year 13</b></p>	<p><b>Component 1:</b></p> <ul style="list-style-type: none"> <li>● 1.4.1 Data Types</li> <li>● 1.4.2 Data Structures</li> <li>● 1.4.3 Boolean Algebra</li> <li>● 1.5.1 Computer related legislation and Ethical, Moral and Cultural Issues</li> <li>● 1.5.2 The Individual (moral), social (ethical) and cultural opportunities and risks of digital technology</li> </ul> <p><b>Component 3: Project:</b></p> <ul style="list-style-type: none"> <li>● Developing the solution</li> </ul> <p>Assessment: exam questions from past papers</p>	<p><b>Component 1:</b></p> <ul style="list-style-type: none"> <li>● 1.1.1 Structure and function of the processors</li> <li>● 1.1.2 Types of Processor</li> <li>● 1.1.3 Input, Output and Storage Devices</li> <li>● 1.2.1 Operating Systems</li> <li>● 1.2.2 Application Generation</li> <li>● 1.2.3 Software Development</li> <li>● 1.3.1 Compression, Encryption and Hashing</li> <li>● 1.3.3 Networks</li> <li>● 1.3.4 Web Technologies</li> <li>● 1.5.1 Computer related legislation</li> <li>● 1.5.2 Ethical, Moral and Cultural Issues</li> </ul> <p><b>Component 2:</b></p> <ul style="list-style-type: none"> <li>● 2.1.1 Thinking Abstractly</li> <li>● 2.1.2 Thinking Ahead</li> <li>● 2.1.3 Thinking Procedurally</li> <li>● 2.1.4 Thinking Logically</li> <li>● 2.1.5 Thinking Concurrently</li> <li>● 2.2.2 Computational Methods</li> <li>● 2.3.1 Algorithms</li> </ul> <p><b>Component 3: Project:</b></p> <ul style="list-style-type: none"> <li>● Evaluation</li> </ul> <p>Assessment: exam questions from past papers</p>	<p><b>Component 1 &amp; 2 Revision.</b></p> <p>Exams:</p> <ul style="list-style-type: none"> <li>● Computer Systems (2 ½ hours)</li> <li>● Algorithms and Programming (2 ½ hours)</li> </ul>