

## POST 16 SUBJECT OVERVIEW

**Name of Subject** - A-Level Computer Science

**Which Examination Specification is Studied for this Course?**

Exam Board OCR - Qualification Number **QN 601/4911/5** - Specification: H446

**Why should I study this course?** - Computer Science is a practical subject where students can apply the academic principles learned in the classroom to real-world systems. It's an intensely creative subject that combines invention and excitement, and can look at the natural world through a digital prism. OCR's A Level in Computer Science will value computational thinking, helping learners to develop the skills to solve problems, design systems and understand the power and limits of human and machine intelligence. The aims of this qualification are to enable learners to develop:

- An understanding 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 to think creatively, innovatively, analytically, logically and critically
- The capacity to see relationships between different aspects of computer science
- Mathematical skills

**Who is suitable to study this course?** - It is suggested that GCSE Computer Science has been studied before attempting this course, however this is not essential if you are a motivated student with a high ability in Mathematics and Logical problem solving.

**What GCSE Qualifications Support the Study of this Course?** GCSE Computer Science, GCSE Mathematics & GCSE Further Mathematics

**What are the Qualification Requirements for this Course?** At least a level 5 Mathematics, English and Science is essential with a level 5 or higher Computer Science or a Level 6 or higher Mathematics being desirable.

**How is the Course Delivered?** - The course will be delivered as a mixture of theory topics and practical programming. Pupils will be taught 4 hours a week with at least 1 of these being practical programming - this will alter through the 2 year course as the project work becomes more important.

The lessons will be structured around worksheets available in Google Classroom, however it is always advisable to make notes on and around the subject in your own folders / books.

<b>Subject Overview</b>		
<b>Half Term</b>	<b>Year 12</b>	<b>Year 13</b>
<b>Autumn 1</b>	Component 1: Software and software development Component 3: Practical Programming	Component 1: Advanced Software and software development and Advanced Exchanging data & Data types, data structures and algorithms Component 3: Programming Project
<b>Autumn 2</b>	Component 1: Exchanging data & Data types, data structures and algorithms Component 3: Practical Programming	Component 1: Advanced Legal, moral, cultural and ethical issues Component 2: Advanced Elements of computational thinking Component 3: Programming Project
<b>Spring 1</b>	Component 1: Legal, moral, cultural and ethical issues Component 3: Practical Programming	Component 2: Advanced Problem solving and programming and Algorithms to solve problems and standard algorithms Component 3: Programming Project
<b>Spring 2</b>	Component 2: Elements of computational thinking Component 3: Practical Programming	Component 1 & 2: Revision Component 3: Programming Project
<b>Summer 1</b>	Component 2: Problem solving and programming and Algorithms to solve problems and standard algorithms Component 3: Practical Programming	Component 1 & 2: Revision
<b>Summer 2</b>	Component 3: Project Work	

## How is the Course Assessed?

Component 1: Computer Systems – 40%

Component 2: Algorithms and Programming – 40%

Component 3 Programming Project – 20%

Component 1 & 2 are externally assessed examinations.

Component 3 is an internally marked and externally moderated assessment.

## What is our Recommended Subject Reading list to Support your Study?

Title	Author
OCR AS and A Level Computer Science	P. M. Heathcote and R. S. U. Heathcote
Tackling A Level projects in Computer Science	Ceredig Cattnach-Chell
Learn C# in One Day and Learn It Well	Jamie Chan
Hello World: How to be Human in the Age of the Machine	Hannah Fry
Once Upon an Algorithm	Martin Erwig
Computational Fairy Tales	Jeremy Kubica
Code: The Hidden Language of Computer Hardware and Software	Charles Petzold

All books are available from Amazon and all other good book retailers.