Computer Science A Level

Course Description:

A Level Computer Science encourages learners to meet the needs of higher education courses as well as twenty-first century digital employers. It encourages learners to think creatively, through applying practical programming solutions, demonstrating that they are effective users of technology.

Learners develop computational thinking and programming skills to solve computer science problems. The qualification is relevant to the modern and changing world of computing, and to the higher education community.

Learners will explore the concepts that lie at the heart of Computer Science and the course will provide a good grounding for other subject areas that require computational thinking and analytical skills.

Qualifications Required:

Minimum entry requirements apply. Grade 5 or above in Maths and a Science.

Aims of the Course:

Computer Science is a practical subject where students can apply the academic principles learned in the classroom to real-world systems. It is an intensely creative subject that combines invention and excitement, that can look at the natural world through a digital prism.

The Computer Science qualification will value computational thinking, helping students to develop the skills to solve problems, design systems and understand the power and limits of human and machine intelligence.

Future Prospects:

You can progress to study and/or work in areas such as:

Artificial Intelligence
Business Information Systems
Computer Games Development
Computer Networking
Robotics Building Technology
Software Engineering
Computer Security & Forensics
Data Science
Interactive Digital Technologies

Student Feedback:

‘It is something that can be used every day.’
‘It shows you how a basic concept can be transformed to make amazing things.’
‘It helps you understand the science behind how things work.’

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A Level Units

01 Computer Systems (40%)
This component will be a traditionally marked and structured question paper with a mix of question types: short-answer, longer-answer, and levels of response mark-scheme-type questions. It will cover the characteristics of contemporary systems architecture and other areas including the following:
The characteristics of contemporary processors, input, output and storage devices
Software and software development
Exchanging data
Data types, data structures and algorithms
Legal, moral, cultural and ethical issues

02 Algorithms and Programming (40%)
This component will be a traditionally marked and structured question paper with two sections, both of which will include a mix of question types: short-answer, longer-answer, and levels of response mark-scheme-type questions.

SECTION A
Traditional questions concerning computational thinking:
Elements of computational thinking
Programming and problem solving
Pattern recognition, abstraction and decomposition
Algorithm design and efficiency
Standard algorithms

SECTION B
There will be a scenario/task contained in the paper, which could be an algorithm or a text page-based task, which will involve problem solving.

03 Programming Project (20%)
Students select their own user-driven problem of an appropriate size and complexity to solve. Students choose their own programming language ranging from Python, Java to C Sharp and any other non-scripting language. This will enable them to demonstrate the skills and knowledge necessary to meet the Assessment Objectives. Students will need to analyse the problem, design a solution, implement the solution and give a thorough evaluation.