Integrity
Curiosity
Respect



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A LEVEL

Computer Science

WHAT IS COMPUTER SCIENCE?

Computer Science is the study of how the computer works, how to program them and how computer systems interact with each other. We often liken it to the "biology of computing" – looking at what actually happens at the heart of a computer, the processor and how the instructions that it is given are actually carried out, as well as how to program it. In fact, there is a very strong programming element to this course that will marry practical and theory work to develop professional-level skills.

It is a science-based course with practical and technical aspects, and demands a good level of problem-solving skills, mathematical and logical reasoning, and a substantial amount of examined theory.

WHY STUDENTS CHOOSE THIS COURSE

A Level Computer Science is the natural progression from GCSE Computer Science but if you are not taking it at GCSE, we still encourage you to take the course. We teach programming from scratch and you will learn;

- Computational Methods, Algorithms and Data Structures that support conceptual and abstract thinking alongside visualisation techniques.
- PYTHON in the second year for the Paper 1 Examination.
- Web Development of responsive, data-driven websites using a range of languages such as HTML, CSS, JavaScript, PHP and MySQL using JSON to exchange data in the first year.

Our mantra is "Think, Solve, Design and Develop" and problem solving is at the core of everything that you will do.

WHAT STUDENTS CAN DO WITH THIS COURSE

The majority of our Computer Science students are aiming to go on to University after A levels and follow computer-related courses, such as computer science, artificial intelligence, software engineering, systems analysis, informatics, web development, networking engineers, games design, games programming etc. or joint courses such as business management with computing or IT.

Increasingly this is seen as a valued A level for STEM based degrees in engineering, aeronautics, astrophysics to name but a few. There are also a lot more Degree Apprenticeships on offer with some major employers in areas such as cyber security, digital media, digital learning, digital marketing and data science.

HOW THIS COURSE IS ASSESSED

There are two examinations and a NEA for A Level Computer Science.

- Paper 1 (40%) is a 2½ hour on-screen examination with content as detailed above.
- Paper 2 (40%) is a 2½ hour written examination.
- NEA (20%) is internally assessed by our teachers and moderated by the exam board and is carried out over a period of 1½ terms.

ENTRY REQUIREMENTS

All our course entry requirements are detailed in the Entry Requirements document located in the admissions section of our website.

FURTHER READING

For PYTHON we would recommend tutorials through Code Academy (https://www. codecademy.com/learn/learn-python-3) or W3Schools (https://www. w3schools.com/ python/default.asp).

For Web Development we suggest W3Schools since it has a lot of great examples (http://www. w3schools.com).

What the course covers

The A Level course is split into three parts:

Paper 1

This is a practical exam where you will be asked to answer questions about a pre-released program and also add functionality to the program. The exam-board program is written in PYTHON and is a test of your ability to solve problems and program under exam conditions.

Paper 2

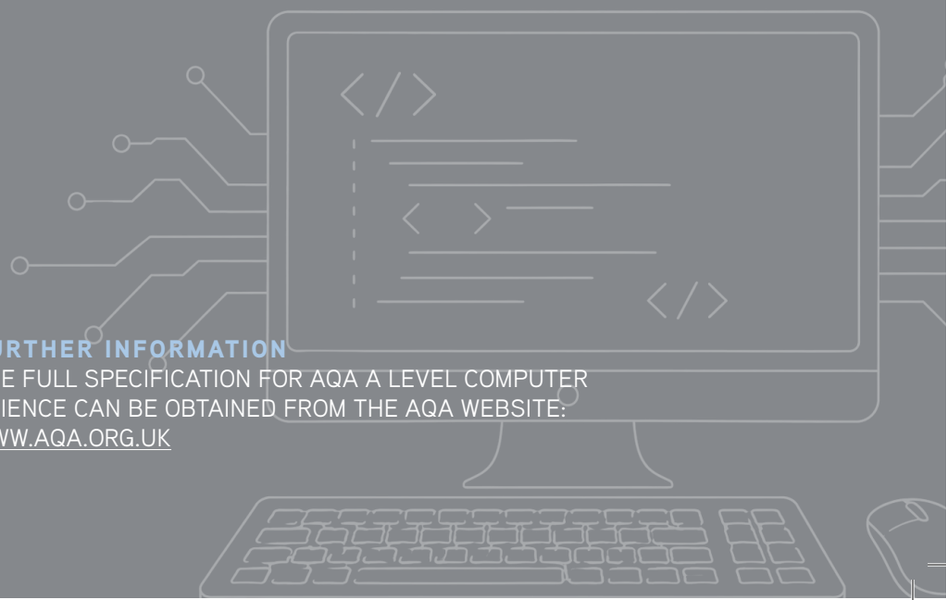
This is a written examination about the "science" of computing and covers topics such as databases, networks and communications, big data, and data representation.

Non Examined Assessment

This is a programming project that gives you the opportunity to apply your knowledge and understanding of the principles of Paper 1 and Paper 2. This is a major piece of work and you have to design, develop and test software:

- You could solve a particular problem by producing software. For example, this may be a data-driven website for a company, a scheduling program to organise routes and drop-off points for a delivery company, a booking system, etc.

- You could carry out an investigation into an area of Computer Science that interests you. As part of the investigation, you have to produce some software to demonstrate an aspect of your investigation. For example, you may choose to investigate machine learning so you would write a report and also develop some software that demonstrates an aspect of machine learning.



FURTHER INFORMATION

THE FULL SPECIFICATION FOR AQA A LEVEL COMPUTER SCIENCE CAN BE OBTAINED FROM THE AQA WEBSITE: WWW.AQA.ORG.UK