Lancaster Girls' Grammar School

GCE Computer Science (AQA 7516/7517)

http://www.aqa.org.uk/7517

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The course is not about learning to use tools or just training in a programming language it's about computational thinking. It's about understanding the reasoning used by both humans and machines and it's an incredibly useful life skill to have. It's Maths and Computing all rolled into one. Many great challenges lie in the future for Computer Scientists to solve.
This course, with its emphasis on abstract thinking, general problem-solving, algorithmic and mathematical reasoning, scientific and engineering-based thinking, is a good foundation for understanding these future challenges.

Exam Board: AQA

AS content

Fundamentals of: programming, data structures, data representation, communication, networking, computer systems and architecture. Along with theory of computation, problem solving and consequences of uses of computing.

A-level content

Extends the knowledge acquired in AS and includes: algorithms, databases, big data, functional programming and a practical project.

Assessed by one on-screen exam, one written exam both 2 hours 30 minutes and a practical project. Exams are 40% each and project is worth 20%.

Preparation over the summer:

If you are keen to be part of the Computer Science course in September then we ask that you do some preparation over the summer.

We recommend you read the following books:

1. Brown Dogs and Barbers by Dr. Karl Beecher. Available from Amazon. Highly recommended.
2. Blown to Bits by Hal Abelson (available to download for free from www.bitsbook.com). We ask that you have read this by Christmas.

We also suggest you download Python 3.5 and begin to have a look at this programming language (available from https://www.python.org/downloads/release/python-350/)

If you are completely new to programming then consider looking through the Python Codecademy course https://www.codecademy.com/learn/python.

Challenges:

1. Write a program to encrypt and decrypt a string at the user's request. Ideally, you would use encryption stronger than the Caesar Cipher, but you may use it if you are struggling. Difficulty: Easy/Medium
2. Make a two player text based noughts and crosses game. Difficulty: Medium.
3. Optional extension: extend the program to be a 1 player vs computer game. Difficulty: Hard

We look forward to seeing you in September.