Lawnswood School

A-Level Computer Science

We are delighted you have chosen to study Computer Science A Level with us!

We are with the exam board OCR. The OCR website has more detailed information on the course.

The exam board specification - https://ocr.org.uk/qualifications/as-and-a-level/computer-science-h046-h446-from-2015/

Here is a quick outline so you know what to expect.

The A Level Computer Science qualification helps students understand the core academic principles of computer science. Classroom learning is transferred into creating real-world systems through the creation of an independent programming project. The course will develop the student's technical understanding and their ability to analyse and solve problems using computational thinking

Course Outline

• 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	Computer systems (01) 140 marks 2 hours and 30 minutes written paper (no calculators allowed)	**40%** of total A level
• Elements of computational thinking • Problem solving and programming • Algorithms to solve problems and standard algorithms	Algorithms and programming (02*) 140 marks 2 hours and 30 minutes written paper (no calculators allowed)	**40%** of total A level
The learner will choose a computing problem to work through according to the guidance in the specification. • Analysis of the problem • Design of the solution • Developing the solution • Evaluation	Programming project 03* – Repository or 04* – Postal or 80 – Carry forward (2018 onwards)* 70 marks	**20%** of total A level

Structure of Programming Project

Title	✓
Contents list	✓
Description of investigation	✓
Justification of investigation	✓
Analysis, design and methods used	✓
Evaluation	✓
Bibliography	✓
Pages numbered	✓

Choosing a Project

Candidates must choose a project individually as long as there is a substantially coded element as part of the solution.

This could be:

- A game
- A simulations
- Automatic scheduling/timetabling
- Online multi-user websites

This can't be:

- Multiple choice quiz
- Simple data storage and retrieval
- VBA projects
- Simple 'single player' games

Appraising Initial Ideas

For each idea, you need to consider:

- Stakeholders
- Potential research avenues
- Data processing needed
- Current problem/initial ideas for a solution
- Programming Language(s) to be used ideas for a suitable GUI

A proposal should be submitted, which I will check with OCR to see it is not limited. The proposal should include:

- Title and brief overview of the project
- Programming Language(s) used
- Main project objectives/success criteria
- Why they think this is a suitable project

Approved Languages

Python
C family of languages (for example C# C+ etc.)
Java
Visual Basic
PHP
Delphi
Swift
NodeJS
Haskell
Unreal/Unity (via C# and C)
Lua
Robot X
Monkey X
JavaScript (likely to be used in conjunction with HTML/CSS/MySQL/PHP)

Graphical User Interface

It is a requirement of the specification that candidates create an appropriate GUI. However, there are **rare** circumstances where this might not be appropriate.

PyGame/Tkinter will be the best route for those using Python

Summer Reading List

You will be creating a game for your A-Level CS project next year. Familiarise yourself with PyGame by completing the tutorials here:

https://inventwithpython.com/pygame/

We look forward to seeing you in September

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Mr Ditta