



LAWNSWOOD  
SCHOOL



## 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

<ul style="list-style-type: none"> <li>• The characteristics of contemporary processors, input, output and storage devices</li> <li>• Software and software development</li> <li>• Exchanging data</li> <li>• Data types, data structures and algorithms</li> <li>• Legal, moral, cultural and ethical issues</li> </ul> <ul style="list-style-type: none"> <li>• Elements of computational thinking</li> <li>• Problem solving and programming</li> <li>• Algorithms to solve problems and standard algorithms</li> </ul> <p><i>The learner will choose a computing problem to work through according to the guidance in the specification.</i></p> <ul style="list-style-type: none"> <li>• Analysis of the problem</li> <li>• Design of the solution</li> <li>• Developing the solution</li> <li>• Evaluation</li> </ul>	<p>Computer systems (01)</p> <p>140 marks</p> <p>2 hours and 30 minutes</p> <p>written paper</p> <p>(no calculators allowed)</p>	<p><b>40%</b></p> <p>of total</p> <p><b>A level</b></p>
	<p>Algorithms and programming (02*)</p> <p>140 marks</p> <p>2 hours and 30 minutes</p> <p>written paper</p> <p>(no calculators allowed)</p>	<p><b>40%</b></p> <p>of total</p> <p><b>A level</b></p>
	<p>Programming project 03* – Repository or 04* – Postal or 80 – Carry forward (2018 onwards)*</p> <p>70 marks</p>	<p><b>20%</b></p> <p>of total</p> <p><b>A level</b></p>

## 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 Gill