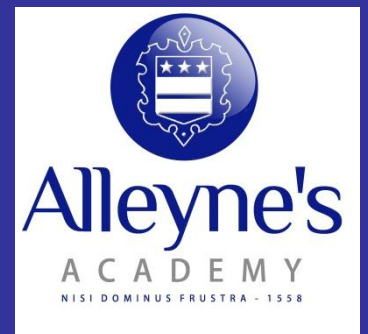


Computer Science A-Level

2027 - 2029



Mrs H Spooner & Mr J Millington



What is Computer Science

- Computer Science is the study of the theoretical and practical engineering of computational devices.
- Computer Science covers in-depth material that will give a deep understanding of both hardware and software including maintenance and development.
- Gain an understanding of how data is sent, received and analysed and the growing importance of network security.

Structure of the course

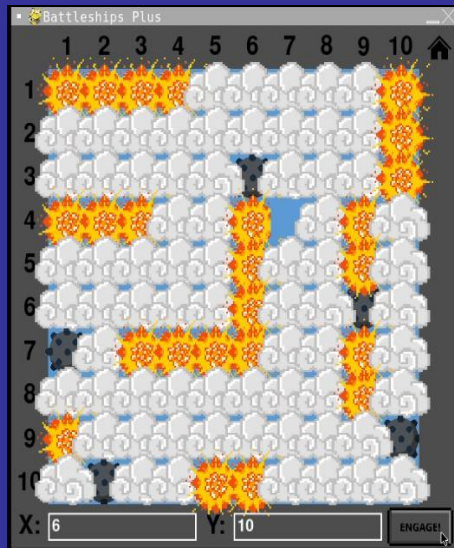
- Two Written Exams – 2½ hours / 40% each
- One Programming Project (Coursework / NEA) 20%
- (Very similar structure to the GCSE)



Units of work

- **Unit 1 – Computer Systems**
 - The Characteristics of Computer Hardware and Software
 - The Importance of Networking and Exchanging Data
- **Unit 2 – Algorithms and Programming**
 - Furthering elements of computational thinking
 - Producing advanced algorithms to efficiently solve problem scenarios.
- **Unit 3 – Programming Project**
 - The learner will choose a computing problem to work through according to the guidance in the specification.

Example student work



```

1 import pygame
2 from buttons import Label
3
4 class Overlay:
5     def __init__(self, display, player):
6         self.display = display
7         self.player = player
8
9         self.overlay_path = "graphics/overlay/"
10        self.tools_surf = {tool: pygame.image.load(f'{self.overlay_path}
11        {tool}.png').convert_alpha() for tool in player.tools}
12        self.seeds_surf = {seed: pygame.image.load(f'{self.overlay_path}
13        {seed}.png').convert_alpha() for seed in player.seeds}
14
15    def display_surf(self):
16        if self.player.selected_item in self.tools_surf:
17            tool_surf = self.tools_surf[self.player.selected_item]
18            tool_rect = tool_surf.get_rect(midbottom = (40, 685))
19            self.display.blit(tool_surf, tool_rect)
20
21        elif self.player.selected_item in self.seeds_surf:
22            seed_surf = self.seeds_surf[self.player.selected_item]
23            seed_rect = seed_surf.get_rect(midbottom = (40, 685))
24            self.display.blit(seed_surf, seed_rect)
25
26    Label(f'{str(self.player.money)}', 10, 10, True, 0, 0,
27        self.display, 24, 0, 0)

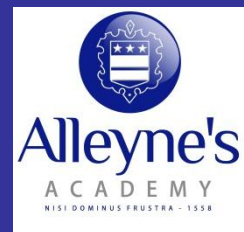
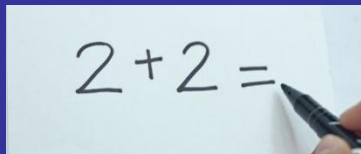
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What subjects does CS go with?

A Levels to accompany Computer Science?

- Maths and Sciences – These subjects tend to have the same logical reasoning (particularly physics) which then compliment each other.
- Business Studies – Computer Science careers are now integral with pretty much all major businesses. It is beneficial to understand how businesses work with and around technology.
- Psychology - especially given the way that communication has changed, and the amount of time we spend on our smartphones and computers.



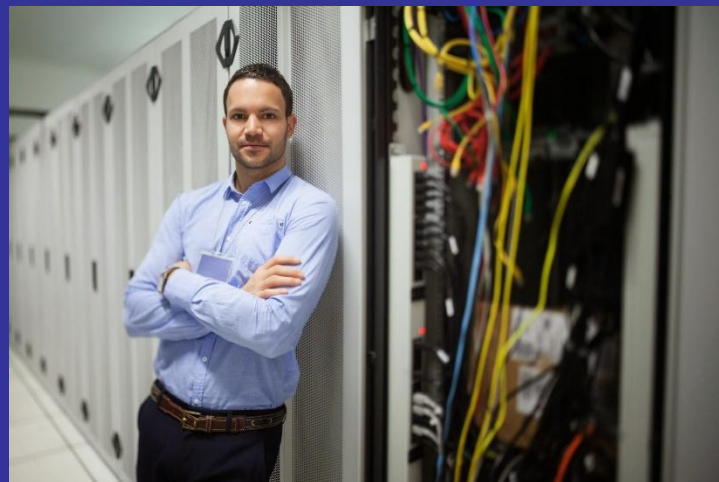
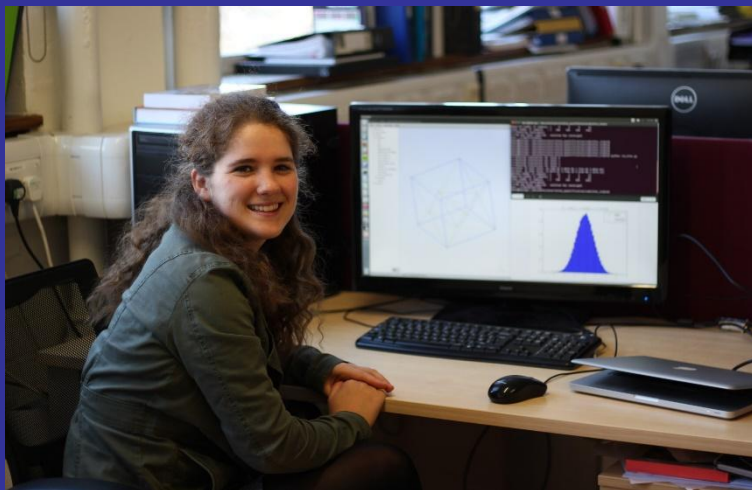
What skills will I get if I study Computer Science?

- Understanding of advanced syntax and programming techniques – critical for developer career paths.
- In depth understanding of the backbones to software packages (what happens under the surface!)
- How to construct a network and maintain its infrastructure and security
- Ability to use abstraction and decomposition within your problem solving
- Project management and organisation

Careers within Computer Science

There is a current shortage of qualified Computer Scientists meaning there are a huge amount of jobs available.

Potential career paths include Software Developer, Network Administrator, Systems Analyst, Teaching, Database Administrator & many, many more.



After the course?

University

Literally THOUSANDS of degree courses.

Computer Science not your main choice as a degree subject? Not to worry, the skills are transferrable to various other courses and employment options.



Apprenticeship

Apprenticeship? Try software, web & telecoms and creative digital media to mention just a few.

Work

Straight into work? Not a problem, there are plenty of job avenues to look at, including Technician, Database administrator + More

Why Choose Computer Science?

- (Pretty much) Guaranteed career paths
- Favoured by many employers and universities
- Interesting and very relevant
- Equips you with transferable skills
- Practical and theory work
- Something that not many people can do!