Cardinal Langley RC Sixth Form

Preparing for A Level Computer Science

INTRODUCTION

Thank you for taking the time to seriously consider choosing Computer Science as one of your A Level options.

This guide will tell you about the course and give you some activities to work through to prepare you for the course. The activities are based around programming and will introduce you to C#.

Work through the activities and start your A level computing Journey.

If you need any help I'm always here. Just email me.

Mr Gumbley: Teacher of Computer Science

COURSE AIMS AND OBJECTIVES

Computer Science is a practical subject where students can apply the academic principles learned in the classroom to real-world systems. It's an intensely creative subject that combines invention and excitement, and can look at the natural world through a digital prism.

The aims of this qualification are to enable learners to develop:

• An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation.

• The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so.

• The capacity to think creatively, innovatively, analytically, logically and critically.

• The capacity to see relationships between different aspects of computer science.

• Mathematical skills.

Over View of A Level Computer Science

Content Overview	Assessment Overview	
• 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 Non-exam assessment	**20%** of total A level

NON EXAMINED PROJECT OVERVIEW

▸ You will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. You will be expected to apply appropriate principles from an agile development approach to the project development.

▸ While the project assessment criteria are organised into specific categories, it is anticipated the final report will document the agile development process and elements for each of the assessment categories will appear throughout the report.

SUMMER TASKS

The **A level project** requires you to develop a project from your own idea unless you have some other plan or idea for the project you can get started developing your skills in unity and C#.

1. Download Unity Game software you will also need visual studio as well. Unless you have used the software before, start off with the 2D game.

2. Get used to using unity and C# you will need this to write scripts to make things happen in the game.

3. Select an idea for a game it is up to you what you want to develop.

4. Tutorials: here are loads of tutorials\on the unity website as well as you tube and other places.

5. Have a look at the course on the open university site: **https://www.open.edu/openlearn/science-maths-technology/free-courses/?filter=date/grid/651/all/all/all/**

You can select courses at various levels to have a look at.

WIDER READING

A level Specification: https://www.ocr.org.uk/Images/170844-specification-accredited-a-level-gce-computer-science-h446.pdf

W3Schools is a popular web site for learning web technologies online: https://www.w3schools.com/

Codecademy is an online freemium interactive platform that offers free coding classes in 12 different programming languages: https://www.codecademy.com/

Stack Overflow is a programming community where help to solve programming problems can be found: https://stackoverflow.com/

MOVING FORWARD....

I hope that you enjoyed working through these tasks and gaining an insight into A Computer Science. Although there are some similarities the course is very different to GCSE study and requires dedication towards lesson attendance and independent completion of class notes / homework / wider reading / research tasks / revision etc... However, I have no doubt you will find A Level Computer Science an interesting and rewarding course. I look forward to seeing you in September.

Please do not hesitate to contact me if you require any further assistance.

Mr Gumbley

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