

# Computing

Creating a world that doesn't yet exist

Have you got what it takes?

So, you enjoyed using Scratch? Well you are not alone. Everyone we have spoken to loved it too. The question now is: are you ready to get truly creative with computing?



Computing is everywhere and in everything. It is about you and your world.

Take a look at the world around you. How close to a computer are you? When was the last time you used one? When was the last time you were creative with one? Life without computers is almost unimaginable. There's nothing that doesn't involve computing in some way.

Computing is not just about writing code for a computer. There is far more to it than that. Just look at the amazing artwork or the surround sound and special effects that go into all the multi million pound video games if you want evidence of this. The UK, by the way, is at the global forefront of this industry. Watch any modern film and the special effects will show countless examples of computing in action. The music you listen to has been engineered, compressed and transmitted all thanks to computers. Read any eMagazine and it is obvious that even traditional professions such as journalism have embraced the technological revolution and are using computers to create a new kind of content.

## Computing Is...

Ai ♦ Algorithms ♦  
Biocomputing ♦ Chip Design ♦  
Communications ♦ Cloud  
Computing ♦ Cognitive Science  
♦ Forensics ♦ Cybercrime ♦  
Database Engineering ♦ E-  
Commerce ♦ Encryption ♦  
Evolutionary Computing ♦  
Genetic Algorithms ♦ Graphics  
♦ Hardware Design ♦  
Informatics Information  
Systems ♦ Language Design ♦  
Logic ♦ Natural Language  
Processing ♦ Networking ♦  
Neural Networks ♦ Operating  
Systems Optimisation ♦  
Real-time Processing ♦  
Vision Processing ♦  
Visualisation ♦ Web  
Engineering  
...among other things

“Computer Science is essential knowledge for the  
21<sup>st</sup> century”

Ian Livingstone, President of games publisher Eidos

## Where will your journey lead if you study Computing?

A GCSE in Computing will give you a fantastic set of skills to do just that. But even more than this, it will give you the skills you need for any career. You want to become a designer, architect, engineer, publisher, medical researcher, sports coach, music or film producer (the list is endless)? Then Computing is one of the best points to start from. Don't know what you want to do with your life just yet? Perfect!

Most of the jobs that will be available when you leave university haven't even been thought of yet! Computing is the very best start you will get here too.

This specification/qualification will enable learners to develop valuable thinking and programming skills that are extremely attractive in the modern workplace. Assessment is through a simple and intuitive assessment model, consisting of two papers, one focusing on the theory of Computer Science and one with a focus on programming and algorithms. Both papers have identical weighting and mark allocations

Topics include:

- Systems Architecture
- Memory
- Storage
- Wired and wireless networks
- Network topologies, protocols and layers
- System security
- System software
- Ethical, legal, cultural and environmental concerns
  
- Algorithms\*
  
- Programming techniques
- Producing robust programs
- Computational logic
- Translators and facilities of languages
- Data representation



Marissa Mayer

## The woman behind Yahoo!

Marissa Mayer graduated from Stanford University with a degree in symbolic systems followed by a master's degree in computer science, specialising in artificial intelligence. She joined Google as employee number 20 in 1999 where she became their first female engineer, rising to become one of their executives. She worked on a range of products including search, news, maps and books. In July 2012 she was appointed President and CEO of Yahoo! According to Fortune magazine she is the 14<sup>th</sup> most powerful businesswoman in America, having been in the top 50 since 2008.



## So what does the course consist of?

**Computing is an intellectually challenging yet very practical and rewarding discipline. The course reflects this. 20% of the course, and the marks, involve creating solutions to real world problems. These focus on creating applications, such as mobile and web apps as well as computer games. The rest of the marks come from a range of theoretical topics which will help you understand how computers work and can be used to solve problems in the world you live in.**

*Have you ever wondered how to spot cyber-crime or program a robot, or make a computer game?*

Our Computer Science qualification will, above all else, be relevant to the modern and changing world of computer science. Computer Science is a practical subject where learners can apply the knowledge and skills learned in the classroom to real-world problems. It is an intensely creative subject that involves invention and excitement. Our Computer Science GCSE will value computational thinking, helping learners to develop the skills to solve problems and design systems that do so.

These skills will be the best preparation for learners who want to go on to study Computer Science at AS or A Level and beyond. The qualification will also provide a good grounding for other subject areas that require computational thinking and analytical skills.

The new specification is split into three components:

### **Component 01 – Computer Systems**

Component 01 focuses on Computer Systems and is similar in style to the old A451 unit. It is an examined unit and makes up 40% of the assessment total.

### **Component 02 – Computational Thinking, Algorithms and Programming**

Component 02 is a new written exam, focused on computational thinking and algorithms. Students will be tested on the elements of computational thinking and logic. They are principally assessed as to their ability to write, correct and improve algorithms.

### **Component 03 – Programming Project (non-exam assessment)**

This component is the non-exam assessment where candidates will be challenged by a range of exciting and engaging tasks to apply the knowledge and skills they have learned.

**Jobs in Computing are vary varied, it's not just programming but includes finding out what business want, marketing a product, designing the sleeve and the promotional material, fixing and installing hardware, but for those intending a career in games design, there is that too.**

**Think of any job, 96% of the most well paid jobs use a computer as an essential tool. Imagine if you could program it to work better.**

**You have to be good at Mathematics to do well at GCSE Computing and you don't get to play games, well just the ones you write, but the earning potential is enormous, particularly for girls because there is a shortage of good coders.**

## FAQ

### Computing is only for boys

No. Girls are just as good at computing as boys, if not better! Girls tend to be more creative in their approach to problem solving which allows them to look at things from many different angles. Boys tend to spot a solution sooner but then don't want to explore alternatives. Boys may get more technical than girls, but girls are more sympathetic to how their creation will be used by others.

### Computing is just for scientists or mathematicians

No. What is most important is that you are creative so that you can see as many different solutions as possible. Artists and designers are just as valued; do people buy Apple products because of the way they make them feel or the way they execute code? Scientists and mathematicians do tend to make excellent computer scientists because their brains work in ways that help them to solve puzzles. However, it is not true that you need to be good at mathematics and science to be good at computing.

### Computing has too much written work

No. The emphasis in Computing is on designing and creating working solutions to problems. You will spend far more time being creative than writing.

### Universities do not value computing

No. Many are actively encouraging it. For example, the University of Bath is offering lower entrance grades for some of their degree courses if you have studied GCSE Computing. Google and Microsoft are publicly supporting the move to reintroduce computing as a compulsory subject in schools.

### Only people who want to be programmers should do Computing

No. The problem solving skills you will develop are of use to everybody. Life is full of problems and obstacles that need to be overcome. Having studied Computing you will be much better equipped to deal with these situations. Computing is relevant to architects, doctors, nurses, music promoters, bands and producers, graphic designers, forensic scientists and many more.

### Computing isn't relevant to me and my life

No. Computing is all about you and your life. It will equip you with many of the skills you will need in the future, whatever you decide to do with your life. We don't yet know what the world will be like when you get a job but I can guarantee that computers will be used a lot more than they are today. With experience of computing you get the chance to create the future rather than just passively letting it happen.

**STOP PRESS**     250,000 Job Vacancies in Computing  
Salary £800 per week average

Sign up now for an exciting GCSE in Computing