

Subject on a Page: Computer Science



In a nutshell:

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 perspective.

“At its heart lies the notion of computational thinking: a mode of thought that goes well beyond software and hardware, and that provides a framework within which to reason about systems and problems.”

In Computer Science we:

- Study way beyond the GCSE specification to gain a wider understanding of how computer systems work and how to solve problems to inform the development of digital solutions. We enhance our programming skills and apply these to a coursework project which is developed using an idea of your own, as long as it meets certain criteria. Most students successfully develop their own computer game or app.
- Learn to understand that the theoretical concepts we study rely heavily on practical solutions, that we benefit from on a day-to-day basis. All our technology that we take for granted would not exist if not for these concepts. We look at how to continue this.

Think like a computer scientist:

- Look at problems to make them easier to solve
- Use computational thinking skills to identify how you can produce solutions
- Be creative to try out new ideas
- Do not be afraid to make mistakes. The best systems out there have failed and been tested over and over again

Write and talk like a computer scientist:

- Multi-tasking OS
- Device Drivers
- Waterfall Model
- Agile Methodologies
- Extreme Programming
- Inheritance
- Encapsulation
- Relational Database
- Primitive Data Types
- Sign and Magnitude
- Floating Point Arithmetic
- Data structures
- Boolean algebra
- Computing related legislation
- Programming techniques
- Computational methods

Read like a computer scientist:

Essential Algorithms and Data Structures by D Hillyard & C Sargent

OCR A level Computer Science by RM Heathcote

Revise like a computer scientist:

- Use SmartRevise to increase your “flight path”
- Access all of the additional resources and external links on our A level Computer Science SharePoint site
- Broaden your subject vocabulary with learning new key terminology
- Use this terminology in your assessments and improving your exam technique

Experience it like a computer scientist:

- Follow the news and current affairs relating to computing and technology issues including artificial intelligence
- Don't wait till lessons to develop your programming skills. There is so much you can do to get yourself ready for what might be a head in your successful diverse career

Progress to a career in computing:

- STEM related careers involving problem solving
- Engineering
- Project management
- Software development and solution design
- Artificial Intelligence
- Cyber Security

A career involving computer science could be in any industry. There is a huge skills gap so this list is just a starting point!