



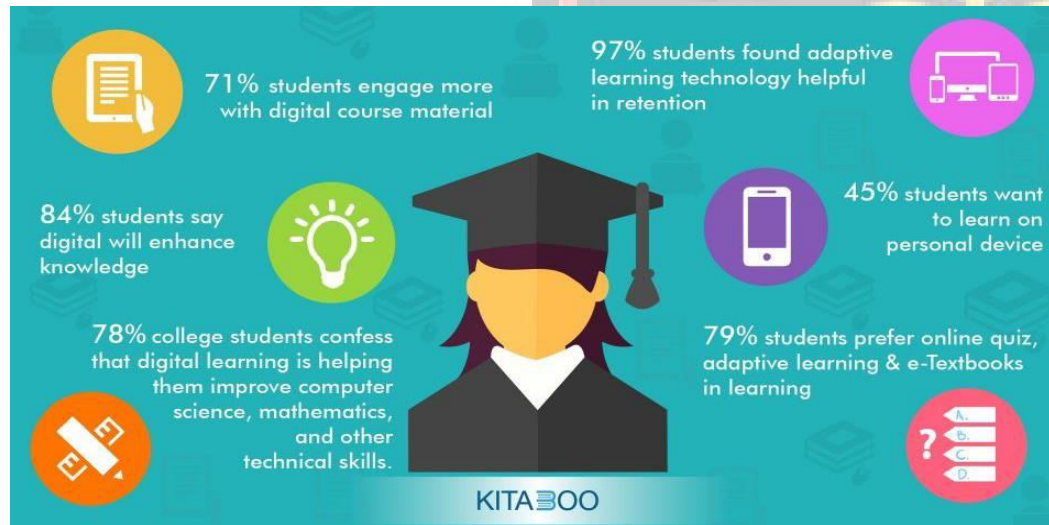
Computer Science



St Ralph
Sherwin
Today Rather Than Tomorrow

GCSE Computer Science – Why choose it?

- Studying Computer Science empowers you to solve complex, challenging problems, enabling you to make a positive difference in the world.
- Computing jobs often come with high salaries.
- Computing skills are essential in a wide range of professions, from astronomy to financial analysis – not just in IT related jobs!
- There are many opportunities for travel and/or remote working for people with high-level computing skills.
- Studying Computer Science can significantly improve performance in other academic subjects.
- The future possibilities for people with Computer Science skills are unlimited, and these skills are only going to become more important.
- Computers are everywhere so understanding them puts you in charge of your world.



Blessed Robert Sutton Catholic Voluntary Academy

Academic excellence, spiritual development and social awareness through Christ

Our Inspiring Curriculum



Computer Science Curriculum will enable you to:

- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
- understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
- undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
- understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

Blessed Robert Sutton Catholic Voluntary Academy

Academic excellence, spiritual development and social awareness through Christ



Course outline

Content Overview	Assessment Overview	
Computer systems <ul style="list-style-type: none">• Systems Architecture• Memory• Storage• Wired and wireless networks• Network topologies, protocols and layers• System security• System software• Ethical, legal, cultural and environmental concerns	Computer systems (01) 80 marks 1 hour and 30 minutes Written paper (no calculators allowed)	50% of total GCSE
Computational thinking, algorithms and programming <ul style="list-style-type: none">• Algorithms *• Programming techniques• Producing robust programs• Computational logic• Translators and facilities of languages• Data representation	Computational thinking, algorithms and programming (02) 80 marks 1 hour and 30 minutes Written paper (no calculators allowed)	50% of total GCSE
* Algorithm questions are not exclusive to Component 02 and can be assessed in either component.		
Programming Project <ul style="list-style-type: none">• Programming techniques• Analysis• Design• Development• Testing and evaluation and conclusions	20 timetabled hours	Formal requirement Consolidates the learning across the specification through practical activity.



TIPS: Ways succeed in this course

- Complete independent revision at home; revising from knowledge organisers, making flashcards, completing past papers and continually reflecting on their work.
- Ensure that at home there is a quiet place to revise away from distractions.
- Ensure you have access to 6 A Day, Axised Revision Guide and CGP Computer Science revision guide and are working through the tasks effectively.



Assessments



- At KS4, Computer Science pupils will be assessed formatively using a range of peer and self-assessment, as well as through marking and feedback in the form of clear targets and questioning by teachers to ensure consistent progression. Pupils will regularly complete exam questions in lesson and as homework.
- **Summative assessment practices at KS4 result in:**
- **Year 10:**
 - Three SPC Assessments – two equating around 45-55 marks and the mock equating to about 80 marks (exploring content from paper 1 and paper 2 and depending on content coverage)
 - End of Unit Assessments
- **Year 11:**
 - Two SPC Assessments – equating to around 45-55 marks (exploring content from paper 1 and paper 2 and depending on content coverage)
 - One Mock – previous cohorts official exam papers, each paper is 80 marks.

Enrichment and Extra Curricular




Blessed Robert Sutton Catholic Voluntary Academy

Academic excellence, Spiritual Development and Social Awareness through Christ

ABLE - GIFTED - TALENTED

KS4 SUBJECT Super Curriculum

Name of Book	Subject Websites/Documents/Podcasts	Name of Film	Name Of Task
<ul style="list-style-type: none"> Once upon an algorithm Tools for thought The new Turing omnibus: 66 excursions in computer science Computational fairy tales Alan Turing: The Enigma <p><i>Write a short book review, explaining what you have learnt about the context in which the book is set.</i></p>	<p>Websites</p> <ul style="list-style-type: none"> www.computerscienceuk.com https://student.craigndave.org https://smartrevise.craigndave.org https://community.computingatschool.org.uk/resources/199/single https://www.njsms.nih.gov/education/Booklets/Computing-Life/Pages/Home.aspx <p>Podcasts</p> <ul style="list-style-type: none"> Craig 'n' Dave <p><i>Use these excellent resources to read up on topics that interest you!</i></p>	<ul style="list-style-type: none"> The Strange Life and Death of Dr Turing Craig 'n' Dave BBC I player 	<p><i>Get inspired using these suggestions, or create some ideas of your own!</i></p> <ul style="list-style-type: none"> https://www.practicepython.org/  <p>Explore and practice python</p> <p>Online courses (for free)</p>



Blessed Robert Sutton Catholic Voluntary Academy

Academic excellence, spiritual development and social awareness through Christ



What our students think...

COMPUTER SCIENCE CAREERS

New technological innovations and the business and organisations on the rise are creating new opportunities for skilled computer scientists, many of which are associated with high salaries.

Gaining a computer science qualification opens up opportunities in various fields, including information technology, aerospace and defence, financial services, retail, the public sector and charitable organisations.

Popular Jobs for Computer Scientists

Computer Programmer
Job description: A computer programmer converts project requirements into code to create and/or modify computer programs. A programmer may also develop technical specifications for websites, machines, everyday appliances and gadgets.
Responsibilities may include:
- Developing, testing and implementing computer programs for a variety of computer platforms and operating systems
- Writing operating instructions for users
- Developing web-based information systems
- Reviewing and updating programs
- Integrating new functionality into existing applications
Salary: £26,000 to £79,000+ depending on experience

Software Developer
Job description: A software developer has an important role in the design, installation, testing and maintenance of software systems. A developer is also responsible for writing and coding individual programs or creating new software as well as modifying and integrating off-the-shelf software into existing networks.
Responsibilities may include:
- Designing software and producing detailed specifications
- Programming test versions of software
- Testing for installation and userability issues
- Maintaining systems once they are up and running
- Preparing training manuals for users
Salary: £24,000 to £58,000+ depending on experience

Network Engineer
Job description: A network engineer installs, maintains and supports computer communication networks within an organisation. An engineer is responsible for ensuring that communication networks operate smoothly so that they provide maximum performance for users.
Responsibilities may include:
- Installing, supporting and maintaining new server hardware and software infrastructures
- Managing email, web, spam and virus protection
- Setting up user accounts, permissions and passwords
- Implementing, maintaining and upgrading network security
- Providing training and technical support for users
Salary: £27,500 to £50,000+ depending on experience

Web Developer
Job description: A web developer is responsible for the design, layout and content of websites. They are also responsible for the ongoing maintenance and updates.
Responsibilities may include:
- Writing programs and scripts to maintain databases
- Designing page layouts for user navigation
- Regulating web content and identifying any legal or copyright issues
- Testing websites and identifying any errors or problems
- Making content, debugging code and maintaining web pages
Salary: £18,000 to £40,000+ depending on experience

Database Administrator
Job description: A database administrator works with the planning and development of databases to ensure performance, integrity and security. An administrator also troubleshoots any issues.
Responsibilities may include:
- Monitoring user access and security
- Monitoring performance to ensure full response to user requests
- Mapping user designs for files and databases
- Monitoring available disk storage
- Developing, managing and testing backup and recovery plans
Salary: £22,000 to £50,000+ depending on experience

Systems Analyst
Job description: A systems analyst designs new IT solutions to improve business efficiency and productivity. An analyst also produces budgets for new systems and works closely with clients to implement solutions.
Responsibilities may include:
- Analyzing a client's existing systems
- Identifying systems for potential solutions
- Writing proposals for installing new or replacement systems
- Ensuring budgets are adhered to and deadlines are met
- Providing training to users of new systems
Salary: £25,000 to £40,000+ depending on experience

“I enjoy computer science because it is very different from other lessons. I particularly like learning more about technology which we use in our everyday lives but not know a lot about.”

“I like computer science because you learn great skills for life if you were to work in an office for example.”

“One of my favourite subjects is computer science.”