



Year 10 Computer Science

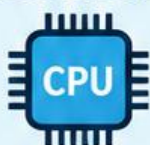
CURRICULUM OVERVIEW

In Year 10, students build a deeper understanding of how computer systems work, how data is represented and transmitted, and the wider impacts of technology. The curriculum develops both theoretical knowledge and practical skills, preparing students for GCSE and beyond.



1

Systems Architecture

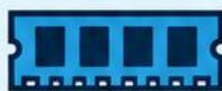


Understanding the components of a computer system.

- Purpose of the CPU and registers
- Factors affecting performance (cache, clock speed, number of cores)
- Embedded systems and their uses

2

Memory



Exploring how data is stored in primary memory.

- Difference between ROM and RAM
- Why we need both ROM and RAM
- Virtual memory
- Flash memory

3

Storage



Exploring secondary storage and how data is kept.

- Primary vs secondary storage
- Common types of storage devices
- Choosing storage based on speed, capacity, durability and cost

4

Data Representation



Understanding how different types of data are represented.

- Units of measurement (bit to TB)
- Binary, denary and hexadecimal conversion
- Adding binary numbers and binary shifts
- Character sets (ASCII, Unicode), images, sound, metadata and compression

5

Wired and Wireless Networks



Understanding how computers communicate.

- LANs, WANs and the Internet
- Client-server and peer-to-peer networks
- Network hardware and performance factors
- Virtual networks and DNS

6

Network Topologies, Protocols and Layers



Exploring how networks are designed and how data is sent.

- Different network topologies
- Encryption and its importance
- Ethernet, IP addressing and MAC addressing
- Protocols and their uses

7

System Security



Keeping systems and data safe.

- Common threats to networks and systems
- Methods to prevent and reduce risks
- User access, authentication and encryption

8

Systems Software



Exploring the software that runs a computer.

- Operating systems and their functions
- Utility software (e.g. antivirus, backup, defrag)
- The importance of backing up data

9

Ethical, Legal, Cultural and Environmental Concerns



Thinking about the wider impact of technology.

- Ethical, legal, cultural and environmental issues
- Stakeholders and their views
- Proprietary vs open source software
- Key legislation (e.g. Computer Misuse Act, DPA)
- E-waste and sustainability



Developing Key Skills

Problem solving | Logical thinking
Creativity | Digital literacy
Collaboration | Independent learning



Wider Opportunities

- Girls into Computing
- Women in Technology (American Express)
- GCHQ CyberFirst Challenges for Girls
- Bebras and other computing challenges
- Exploring future careers in technology



Assessment

A range of quizzes, practical tasks, classwork and end-of-unit assessments are used to check understanding and support progress.



Where Next?

Year 10 builds the knowledge and skills needed for Year 11, GCSE Computer Science and beyond, opening doors to a wide range of exciting careers in technology.