KS4 Curriculum : Computer Science

Curriculum Vision

AQA GCSE Computer Science

The intent of our curriculum is to:

- Provide opportunities that allow all students, building on their prior knowledge and digital literacy, to understand and apply the fundamental principles and concepts of computer science, information technology and digital literacy.
- Expose students to a breadth of procedural and declarative knowledge across these three disciplines.
- Encourage students to analyse problems in computational terms and to have repeated practical experience of writing computer programs in order to solve problems.
- Provide new and repeated encounters with concepts in a variety of contexts to build a breadth and depth of knowledge.
- Encourage students to be critical and mindful of growth potential through evaluation and application of information technology, including new or unfamiliar technologies, analytically to solve problems.
- Equip students with the requisite technological and programming skills to prepare them for further study and future careers.

Curriculum Profile

Year 10

Autumn Term 1	Autumn Term 2
Algorithms: • Algorithms, decomposition and abstraction. • Developing algorithms using flowcharts. • Developing algorithms using pseudocode. Programming:	Algorithms: • Searching algorithms. • Sorting algorithms. Programming: • Iteration. • 1D and 2D arrays. • Records and files.

• Data types and operations. • Sequence and selection.	

Spring Term 1	Spring Term 2
Programming: • Procedures and functions. • Validation and authentication. Data representation: • Storage units and binary numbers. • Binary arithmetic and hexadecimal.	Programming: • Determining the purpose of algorithms. • Errors and testing. Data representation: • ASCII and Unicode. • Images.

Summer Term 1	Summer Term 2
Data representation: • Sound. • Compression. Computer systems: • Boolean logic. • Application and system software.	Computer systems: • Systems architecture. • Programming languages and translators. • The CPU and Fetch-Execute cycle.

Year 11

Autumn Term 1	Autumn Term 2
Computer systems: • Memory. • Secondary storage. Computer networks: • Wired and wireless networks. • Network topologies. • Network security.	Computer networks: • Protocols and layers. Cyber security: • Cyber security and threats. • Social engineering. • Malicious code. • Detection and prevention.

Spring Term 1	Spring Term 2
Relational databases and SQL: • Databases. • Relational databases. • SQL.	Revision and Examination technique

Ethics: • Ethical issues. • Digital technology in society. • Legislation and privacy.	

Summer Term 1	Summer Term 2
Revision and Examination technique	Public Examinations

Please note that this timeline may be subject to change.

Assessment and Feedback

All students will:
• Have at least one piece of assessed work reviewed by their teacher per half-term (this increases to two pieces of assessed work if students receive five or more taught hours per fortnight).
• Receive feedback which outlines how they should develop their learning. This feedback should be summative, highlighting both key strengths and key areas for development in students' work.
• Be given the opportunity to act upon their feedback in a structured task. This task should then be reviewed again by the subject teacher. A review of this task can act as the second assessed task.

Resources to support learning beyond the classroom:

https://filestore.aqa.org.uk/resources/computing/specifications/AQA-8525-SP-2020.PDF

https://smartrevise.online/Account/Login

https://isaaccomputerscience.org/?examBoard=all&stage=all