



Long Term Plan

Computer

Science

KS4 (Year 10 & Year 11)

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Subject intent/vision:

To provide high quality education in both the theoretical and applied foundations of Computer Science in order to equip and train students to effectively apply this knowledge to solve real-world problems thus increase their potential for lifelong learning and give them a competitive advantage in the ever changing and challenging global work environment of the 21st century.

To enable all students to achieve, our subject curriculum is underpinned by the following principles:



Ambitious - KS4 Computer Science aims to empower students with a comprehensive understanding of computing, fostering creativity through hands-on coding activities. The curriculum prepares students for advanced studies at KS5 and cultivates responsible, informed technology users ready for future challenges.



Sequenced / Spiral - Our spiral curriculum iteratively revisits and deepens topics, building on previous knowledge. Lessons are sequenced to ensure a logical, coherent learning experience, with each one building on the last.



Literacy - KS4 Computer Science promotes literacy through technical vocabulary, comprehension of computing concepts, and clear communication in coding. By exploring societal impacts of technology and integrating literacy elements, it aims to develop students who can effectively communicate and critically analyse computing concepts.



Cultural Capital - KS4 Computer Science promotes cultural capital through immersive experiences like museum trips and studio visits, enriching students' understanding of computing's cultural and historical context. These activities aim to connect learning to real-world applications, inspiring students to appreciate the societal impact and diverse opportunities in technology.



Long Term Plan

From September 2026: KS4 Computer Studies Programme of Study (Year 10)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Data Representation During this unit of work, students will re-visit number systems and understand how binary is used to represent different types of data on a computer system such as images, sound and characters. Students will have the opportunity to decipher binary into these different forms of data.	System Architecture & Networks Students will gain an understanding of the components in a computer system, and understand the finer details of the CPU. Students will also explore different storage mediums and will be able to compare the characteristics of these. Students will also explore hardware required for computer networks, different network topologies, types of networks, protocols, methods of connectivity and how a domain name server works.	Security, Software & Impacts of Technology Students will gain an advanced understanding of the different types of computer system and network threats, methods to prevent threats, utility software and their purposes, and different operating systems across various devices. Learn what each function of an operating system does, learn the features of a user interface and memory management. Students will also gain an understanding of different legislation in Computing, as well as the ethical, cultural, environmental implications of technology.	Python Programming During this unit of work, students will further their programming skills continuing to use Python to further enhance their algorithmic thinking and programming skills. Students will gain a further understanding of different data types used, creating and using functions, the appropriate use of looping and selection statements and applying the skills they have used to a GCSE style problem. Students by the end of the topic should be able to create various programs for given scenarios.	Algorithms Students will gain an advanced understanding of searching and sorting algorithms and use algorithmic thinking to carry out each searching and sorting algorithm. Students will also whilst improving their computational thinking skills. Students will be creating algorithms using Pseudocode and Flowcharts for various problems. Students will also hone their skills in abstraction and decomposition.	Logic & Languages Students will gain further understanding of the different logic gates and their truth tables. Students will be able to create different logic circuits given an equation. Students will also gain an understanding of defensive design within programming, test designing, different levels of programming languages and the uses of IDE's.
Assessment: 50 marks/60 minutes	Assessment: 50 marks/60 minutes	Assessment: 50 marks/60 minutes Paper 1 80 marks/90 minutes	Assessment: 50 marks/60 minutes	Assessment: 50 marks/60 minutes	Assessment: 50 marks/60 minutes Paper 2 80 marks/90 minutes



From September 2025: KS4 Computer Studies Programme of Study (Year 11)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Paper 1 Recap Students will briefly cover the following topics again in preparation for their mock exam: - Systems architecture - Memory and storage - Computer networks, connections and protocols - Network security - Systems software - Ethical, legal, cultural and environmental impacts of digital technology	Paper 2 Recap Students will briefly cover the following topics again in preparation for their mock exam: - Algorithms - Programming fundamentals - Producing robust programs - Boolean logic - Programming languages and IDE's	Targeted Revision Students will use analysis from mock papers and previous assessments to identify topics that they need to improve on. The following revision resources will be given to students to close gaps in their knowledge: - Revision Guides - Knowledge Organisers - Past Paper Practice Questions - End of Unit Practice Questions - Flashcards - Lesson Content via Google Classroom - Additional Programming Challenges - Condensed Content in booklet format		Final Exams Finished	Final Exams Finished
Assessment: Paper 1 and 2 (Short) 80 marks/90 minutes	Assessment: Paper 1 (Mock Exam 1) Paper 2 (Mock Exam 1) 80 marks/90 minutes	Assessment: Targeted End of Unit Tests	Assessment: Paper 1 (Mock Exam 2) Paper 2 (Mock Exam 2) 80 marks/90 minutes		



KS4 Overview

At the end of Year 11, students final GCSE grade will be externally assessed in the following way:

OCR Computer Science - J277	
Paper 1 (J277/01)	Paper 2 (J277/02)
Computer Systems This component will assess: - 1.1 Systems architecture - 1.2 Memory and storage - 1.3 Computer networks, connections and protocols - 1.4 Network security - 1.5 Systems software - 1.6 Ethical, legal, cultural and environmental impacts of digital technology	Computational thinking, algorithms and programming This component will assess: - 2.1 Algorithms - 2.2 Programming fundamentals - 2.3 Producing robust programs - 2.4 Boolean logic - 2.5 Programming languages and IDE's
Both papers prohibit the use of calculators Both papers carry 80 marks each Both papers have a duration of 1 hour and 30 minutes Each paper equates to 50% of students' final GCSE grade.	

The GCSE specification can be found here:

ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/

Learning Resources:

Trinket (Python programming)

<https://trinket.io/>

Craig and Dave

<https://www.youtube.com/channel/UC0HzEBLIJxlrwBAHJ5S9JQg>

Learn Python

<http://www.pythonschool.net/>

To practise Python programming

<https://snakify.org/en/>

Online Revision Notes and Practice Questions

<https://www.senecalearning.com/>

Computer Science Resources

<http://teach-ict.com/>

BBC Bitesize

<http://www.bbc.co.uk/schools/gcsebitesize/>

Cambridge Elevate

<https://elevate.cambridge.org/elevate/>

Online Python

<https://repl.it/languages/python3>