OCR GCSE Computer Science: Long term overview of 2019 - 2021

This is an extracurricular class for students who wish to complete an extra GCSE. They have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All students will be taught to:

- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytical, problem-solving, design, and computational thinking skills
- understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.

Year 9/10	Focus / Topic	Knowledge & Skills	Assessment
Autumn 1	Systems architecture, memory and storage	✓ To understand the characteristics and functionality of a computer's internal components ✓ Low-level assembly language programming (fetch - decode - execute)	End of section test; exam question analysis.
Autumn 2	Data representation	✓ Storage units; measurement of speed in Hertz. ✓ Number systems including binary denary and hexadecimal arithmetic	End of section test; exam question analysis.
Spring 1	Data representation (continued)	✓ Information types, including ASCII & UNICODE, images and sound ✓ Compression techniques	End of section test; exam question analysis.
Spring 2	Algorithms	✓ Computational thinking ✓ Various algorithmic schemes, including sorting, searching ✓ Representation of algorithms through flow diagrams and/or pseudocode	Successful demonstration of algorithms..
Summer 1	Programming methodology	✓ Data types (strings and numbers); operators and I/O ✓ Procedural programming with subroutines ✓ Reading and writing files ✓ Databases using Python and SQL	Successful execution of programs.
Summer 2	Algorithms and programming with Python	✓ Putting the ideas into practice.	End of section test; exam question analysis.

Year 10/11	Focus / Topic	Knowledge & Skills	Assessment
Autumn 1	Logic and languages	✓ Interpreting logic gates and a scheme of diagrams into truth tables ✓ Facilities of an integrated development environment (IDE)	End of section test; exam question analysis.
Half-term	Non-Exam Assessment	Three-day programming project according to a brief, applying computational thinking into suitable algorithms and to solve the problem by writing a computer program.	Does not count towards the final grade, however evidence of development must be supplied to OCR. Programming features appear in both exam papers.
Autumn 2	Wired & Wireless Networks	✓ Internet; wide and local area networks ✓ Wireless networking ✓ Client-server and peer-to-peer networks ✓ Protocol schemes and network data layers	End of section test; exam question analysis.
	Ethical, legal, cultural and environmental concerns	✓ Computer systems in the modern world ✓ Legislation and privacy	End of section test; exam question analysis.
Spring 1	Systems software and security	✓ Network threats ✓ Operating system software ✓ Utility software	End of section test; exam question analysis.
Spring 2	Revision of all topics	✓ Coverage of all the above	Practice exam questions; practice of long-answer questions.
Summer 1	Revision, then final exam	✓ Coverage of all the above	Public exam, expected in May 2021 during week 2. 1. Computer Systems 2. Computational thinking, algorithms and programming