KS4 – OCR Computer Science J276 (Years 9 to 11)

This course will give learners a real, in-depth understanding of how computer technology works. Pupils will no doubt be familiar with the use of computers and other related technology from their everyday life or Core ICT where the focus is on the use of application software to solve a problem. Computing on the other hand concentrates on learning and understanding the use of algorithms in computer programs like Python and pupils are then expected to use these skills to develop their own computer programs to solve problems. Computing is therefore a much more specialist course than ICT and pupils must have an ability to think logically and have a good knowledge of Mathematics.

Examination board:	OCR (GCSE 9-1)
Examinations:	*Year 11* **Computer systems** (50% of the total GCSE) 80 Marks Exam duration 1 hour 30 minutes **Computational Thinking, Algorithms and Programming** (50% of GCSE total) 80 Marks Exam duration 1 hour 30 minutes
Non-Exam Assessment	The NEA no longer counts towards the final grade but you are expected to spend 20 hours completing it. This assessment is set and moderated by the exam board.

Curriculum overview

Component	Topics covered
Computer Systems This unit covers the body of knowledge about computer systems on which the examination will be based. There is some overlap with the theory required for GCSE ICT.	- Systems architecture - Memory - Storage - Wired and wireless networks - Network topologies, protocols and layers - System security - Systems software - Moral, legal, cultural and environmental concerns
Computational thinking, algorithms and programming This unit is focused on computational thinking and algorithms. Students will be tested on the elements of computational thinking and logic. They are principally assessed as to their ability to write, correct and improve algorithms.	- Algorithms - Programming techniques - Producing robust programs - Computational logic - Translators and facilities of languages - Data representation
Programming project (NEA) This component is the non-exam assessment where pupils will be challenged by a range of exciting and engaging tasks to apply the knowledge and skills they have learned.	**Skills that will be assessed:** - Programming techniques - Analysis - Design - Development - Testing and evaluation and conclusions

Useful websites

https://www.codecademy.com
https://www.khanacademy.org/computing/computer-science
www.scratch.mit.edu/
https://www.thinkuknow.co.uk/
http://ceop.police.uk/
http://www.childnet.com/
http://www.mrfraser.org/

http://www.saferinternet.org.uk
http://www.bbc.co.uk/schools/0/computing/28975331
https://coderdojo.com/
http://www.computingatschool.org.uk/
www.teachict.com
https://www.gcsepod.com
https://studio.code.org/projects/applab/iukLbcDnzqgoxuu810unLw

Books

OCR GCSE (9-1) Computer Science, S Robson and PM Heathcote
ISBN:978 -1- 910523-08-7
GCSE OCR Computer Science, CGP Revision Guide
ISBN: 978-1-78294-602-1
Python Basics, Chris Roffey (Level 1)
ISBN: 978-1-107-63109-0
Raspberry Pi for Kids, Richard Wentk
ISBN: 978-1-119-04951-7
Python Playground, Mahesh Venkitachalam
ISBN: 978-1-59327-604-1
Python Programming for the Absolute Beginner, Michael Dawson
ISBN: 978-1-4354-5500-9