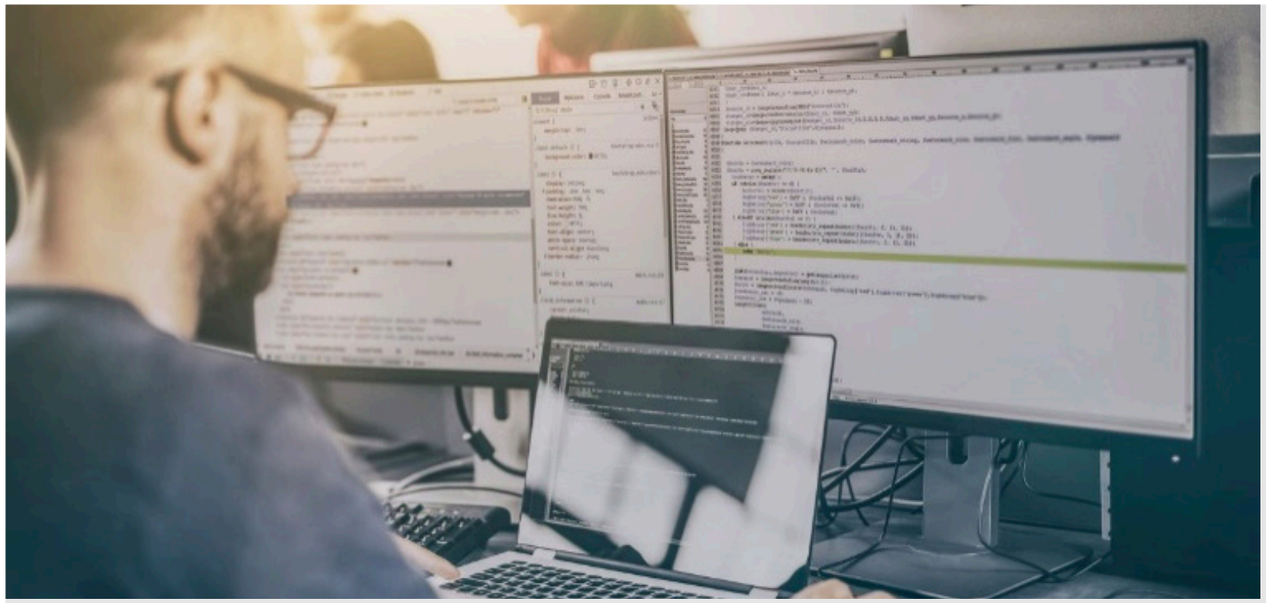

Computer Science GCSE

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

Course Title	Exam Board	Specification Code	Head of Department
GCSE Computer Science	OCR	J277	Mr Freeman-Jones

Course Information
The GCSE in Computer Science encourages learners to be inspired, moved and challenged in the rigorous subject of Computer Science. Topics covered include: Systems Architecture, Memory, Storage, Wired and Wireless Networks, Network Topologies, Protocols and Layers, and System Security. There has never been a better time to study this subject; cyber security is a growth area and commands high salaries.

Skills/Aptitude Required
- Understand and apply the fundamental principles and concepts, including abstraction, decomposition, logic, algorithms, and data representation.
- Analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs.
- Think creatively, innovatively, analytically, logically and critically.
- Understand the components that make up digital systems, and how they communicate with one another and with other systems.
- Understand the impacts of digital technology to the individual and to wider society.
- Apply mathematical skills relevant to Computer Science.

Next Steps
At The Howard School you can progress to OCR Level 3 Cambridge Technical in IT, but this qualification also has links with A-Level Computer Science.

Entry
Entry to this course is subject to an entry exam, testing your suitability through skill, and making sure students are in the right courses to achieve the best outcomes possible.

Future Careers
- Computer Scientist (Research): £25k – £70k
- Teacher: £25k – 32K
- Cyber Security Expert: £35k – £70K+
- Network Security: £57k
- Software Engineer: £25k – £50k

The Course in Depth

Year 9 Topics Covered
We start by gaining some practical programming skills including string and file manipulation and handling, SQL and databases etc. All of this is linked to the theory, which includes Defensive design methods, Identify syntax and logic errors and Languages & IDE.

Year 10 Topics Covered
At this stage, we look into the foundation concepts including looking at how data is stored in computer systems including, units of storage, binary and hexadecimal numbers, images, sound, characters and compression. We also cover Boolean logic. We cover computational thinking terms such as abstraction, decomposition and algorithmic thinking.

We then learn about the architecture of the CPU including the Von Neumann architecture and the Fetch-Decode-Execute cycle.

Year 11 Topics Covered
The main focus of this year will be on networks ranging form Networks and topologies, Networks, protocols and layers, Networks threats and prevention methods. We will finish with looking at different types of software and the ethical and legal implication of computer use.

Internal Assessment
Internal assessment does not contribute to final grade.

Students have a test at the end of every topic within each unit.

The tests inform students and staff where improvements can be made to ensure they continue to make good progress.

External Assessment
All components are externally assessed at the end of Year 11.

Paper 1: Computer Systems

Written paper: 1 hour and 30 minutes
50% of total GCSE
80 marks

Paper 2: Computational Thinking, Algorithms and Programming

Written paper: 1 hour and 30 minutes
50% of total GCSE
80 marks

"Everyone should learn how to code, it teaches you how to think."

Steve Jobs