

A-Level Computer Science

The A-Level course follows the AQA specification. It comprises a mixed practical and theoretical paper which is worth 40% of the marks and leads to a 2½ hour, on-screen examination. The second, theoretical module counts also for 40% and has a 2½ hour, written examination. A substantial development project is also undertaken. The course will run with twelve timetabled lessons per two weeks over lower sixth and upper sixth.

Paper 1 covers fundamentals of data structures, programming, and software development, with abstraction and automation. It has an examined practical exercise with a skeleton program being provided by the exam board. The programming languages studied include Python and Lua.

Paper 2 covers fundamentals of data representation, computer systems, computer organisation and architecture and fundamentals of communication and networking. This means that we look in some detail about how the computer works and the different important elements of the motherboard. Logic circuits are covered as is Boolean algebra.

Careers

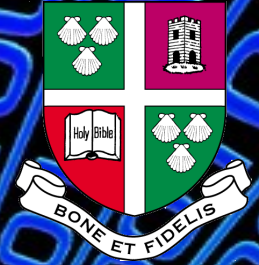
A myriad of careers follow from the study of computer science at A-level. For the technically minded there are University courses in Computing or Informatics. For those more people-oriented there are courses in management, marketing and support. Many courses mix Computing with Business or other subjects. Those going on directly to employment will have IT skills to envy in the workplace.

Teaching Staff: M Gill

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Support Staff: P Atkin

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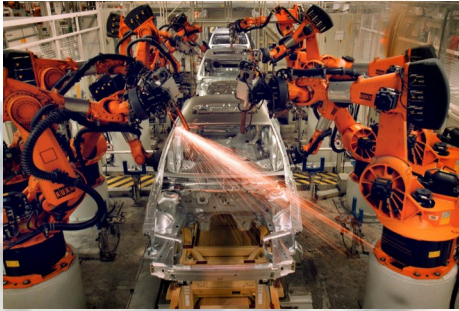


COMPUTER SCIENCE

Computing in Year 7

This is a practical, contemporary course for two periods per fortnight. Modules in Year 7 include: the impact of technology and collaborating online respectfully, modelling data, networks, programming essentials in Scratch, and using media.

We work cross curricular with the maths department to teach spreadsheet modelling and use of formulas using Excel, along with basic graphs and charts. There are lessons on the sensible use of the Internet with advanced searching techniques. Students also look at the manipulation of graphics. Scratch programming, both for beginners and more experienced learners and programming concepts such as sequencing, variables, selection and count-controlled iteration, also feature.



preparing students for GCSE computer science, including learning about writing algorithms. Additionally learners will study image and sound manipulation and editing, applied in real settings.



This option course is taught for five lessons per two week cycle. Prep is also set.

Year 10 and 11 GCSE Computer Science



Students may choose to follow a GCSE course in computer science. This will go into more detail than was covered in Y9 and will introduce new topics as well as further development of Python.

The programming project will check understanding of being able to use a programming language (Python) to solve a problem and is good preparation for paper 2 as part of the exams. The course also looks at elements within a computer system, concepts of a database and covers some networking information. The system development lifecycle is taught with some emphasis on testing a solution and the handling of errors within a system. A written exam and online programming exam form the final assessment.

Computing in Year 8

In the second year at the Grove we build on the introduction in Year 7 with units covering computing systems, developing for the web (including HTML and CSS), an introduction to Python programming, media (including vector graphics), mobile app development, and the development of binary computing in a historical context.

Year 9 Computing Option

In Year 9, there will be further focus on applying the skills learnt in Y8 to real life scenarios. There will be further extension of techniques in a range of software. Modules include: cybersecurity, data science, animation, physical computing using BBC Micro:bit, as well as development of Python programming skills with a view to

Sixth Form

The department also offers the opportunity to study A-level computer science to gain an understanding of the academic side of computers as well as other standard skills for life. This is taught using Flipped Classroom pedagogy, and includes helping students develop study skills that will prepare them for university, including Cornell note-taking.