



Wirral Grammar School for Boys 6th Y11 A-level Options 2022.

FAQ Information Sheet for: COMPUTER SCIENCE

What is Computer science?

Computer science is the study of computers and algorithmic processes including their principles, their hardware and software designs, their applications, and their impact on society.

Why is computer science important?

Computer science is a rapidly growing field that develops essential knowledge and skills for today's world. Between 2008 and 2021 there will be 2.4 million job openings for STEM (Science, Technology, Engineering, and Math) workers and by 2021, 51% of all STEM jobs will be dominated by computer occupations. STEM graduates make substantially more money over their lifetimes than non-STEM majors. Computer science also cultivates computational thinking, problem solving skills and creative thinking; foundational learning for all occupations.

How will the course be taught?

The computer science A level is taught using a combination of presentations, videos, animations / simulations to deliver the different concepts and ideas. The pupils reinforce their knowledge by using specially designed software, worksheet questions, carrying out programming assignments and past paper questions. It is important that the pupils develop an enquiring mind to be able to understand and solve problems by experimenting and challenging their understanding over different ideas. There are assessments that are performed and carried out at the end of each unit of assessment.

How much of the course is programming?

The AQA board sends out a skeleton program in the final year, which is a program that the pupils must familiarise themselves with and learn to edit and change. The skeleton program is involved in two out of four sections in paper 1 (40%). The pupils are also expected to complete a Non-Examination Assessment (NEA) whereby they are expected to choose a real-life problem and solve it using a programming environment, such as the python programming language.

How is the course resourced?

The pupils will be given an A level computer science textbook, an exercise book and a revision guide along with access to web-based resources and paper revision guide booklets to assist the pupils in completing different aspects of the course.

What is the format of the course?

The course is broken down into paper 1 that is an examination taken on the computer. The examination is broken down into a theory component and a programming part that makes use of the computer. The examination takes two hours and thirty minutes and accounts for 40% of the marks. The paper 2 examination comprises of all theory. The examination takes two hours and thirty minutes and accounts for 40% of the marks. Finally the non-examined assessment (NEA) coursework component accounts for 20% of the qualification and can be completed over a two year period.

How can I get better at computer science?

The main way that pupils can improve their understanding of computer science and improve is to spend more time setting themselves small problems, possibly in small groups to further their knowledge. This could entail programming a game, a mobile application, a quiz or a username / password application. It is important that the scope of the problem is small and achievable to begin with, but with further perseverance, the problems can grow in complexity. This will help develop a growing understanding and help experimentation and exploration of the subject.

What are typical A level subject choices along with computer science?

The following subjects are commonly taken along with computer science; maths, further maths, physics, business studies and economics.

What can you do with an A level in computer science?

There are many different avenues that pupils can take once they have achieved their A level in computer science. Many pupils go on to graduate with a BSc degree in Computer Science. They can apply for a whole range of different career paths, such as IT consultant, cybersecurity consultant, information systems manager, database administrator, multimedia programmer, systems analyst, games developer or technical writer.

Wirral Grammar School pupils who have completed an A level in computer science in the past have followed a range of computer related professions, including careers in data science, cyber-security, web design and developing mobile applications.

What extracurricular opportunities are offered at A level?

Throughout the A level computer science course pupils can have the opportunity to engage in extracurricular activities. In the past couple of years, recent visits have included trips to Bletchley Park, home of the code breakers and the National Computer Science Museum, attending an assistive technology conference at the Walton Centre and a planned tour of Jaguar Land Rover to see the automotive processes at work in the factory.

The pupils can have the opportunity to participate in the annual British Informatics Olympiad computer programming competition, the Alan Turing Cryptography Competition, the Matrix cyber security challenge and participate in computer science activities to raise money for the school charity.