Wakefield Girls' High School
Queen Elizabeth Grammar School
Wakefield

Technical Information

A-level

A-level Course Title	Unit Code	Awarding Body
Computer Science	H446	OCR

A-level Examinations:

Name	Method of Assessment	Marks
Computer systems	Written Paper 2 hours 30 mins	40% of A-level
Algorithms and programming	Written Paper 2 hours 30 mins	40% of A-level
Programming Project	Practical Project	20% of A-level

WGHS Senior School
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Course Guide

A-level Computer Science

Computer Science

Background Knowledge and Qualifications

“Software is the nearest thing to magic that we have invented.” (John Naughton, Professor of the Public Understanding of Technology, Open University).

Computer Science is about creating solutions. As society becomes more controlled by computers, we study the tools and techniques used to create the websites, apps and programs which will be used to run the world. If you have ever wondered why you can never find the right website or program for a particular job, Computer Science will teach you how to create it yourself.

What do I need to know or be able to do before taking this course?

The Computer Science A-level has been designed so that you do not require any previous knowledge of programming, as all relevant skills will be taught. Students who already have some programming experience will have the opportunity to extend their understanding with new techniques. You should be very comfortable working with numbers, and a good grade in GCSE Mathematics is recommended.

Course description

As well as learning about the components that make up a modern computer and the way they function, the course focuses on computational thinking and programming skills.

You will discover how software is written, compiled and executed, and how different computer languages operate on a fundamental level, right down to their handling of memory and the computer processor.

You will learn how to write algorithms to solve common computing problems such as sorting, searching, encryption and communicating across a network. You will consider what makes one algorithm more efficient than another, and learn tricks and techniques to help you break down large problems into smaller, more manageable ones.

All topics will be taught with a combination of theory lessons and practical workshops. The main language we teach will be Python, a popular and powerful language that is suitable for beginners and experienced programmers alike. You will also learn HTML, CSS and Javascript: the languages that form the bulk of the web.

The full A-level course also features a practical project which can be completed in your choice of language, so it offers an opportunity for students who may have an interest in Java, C# or PHP.

Finally, because the nature of Computer Science is constantly changing, we will consider the current state-of-the-art in areas such as artificial intelligence and automation.

What kind of student is this course suitable for?

This course is suitable for students who are keen to understand how things work. You should enjoy problem solving and puzzles, and have a logical mind. The course fits closely with other sciences and mathematics, but a good imagination is also an advantage.

Use of Course and Qualification

Computing at university comes in many different flavours. As well as pure Computer Science degrees, many universities also offer Computer Science combined with subjects such as Mathematics, Physics, Business, Artificial Intelligence or Philosophy. There are Information Systems courses which contain elements of web design and general systems design, and a number of dedicated multimedia design courses for those interested in animation and the application of computing in the arts.

For society in general, Computer Science is having a transformative impact. Companies like Apple and Google are shaping the way the world communicates, does business and organises itself. This impact comes from an appreciation of Computer Science and the solutions it presents.

These solutions include new apps, hardware and websites that drive our technological society, and digital media that form the bulk of the entertainment industry. They include computer models that form an important part of environmental science and engineering. Automation and intelligent decision-making systems are changing many industries, and developments such as autonomous cars and robotics provide an exciting glimpse of the future.

By studying Computer Science you will not only have a greater understanding of these developments, you can have a stake in their creation. Above all, Computing teaches you ways to work logically and methodically, allowing you to think through the problems you will encounter throughout life.

Student Testimonial

Year 13 student
Proposed University Course: Computer Science

I feel I have achieved a great amount studying Computer Science, and I want to continue with Computing for the rest of my life. Being shown that it is possible to program almost anything just amazes me, and problem solving has become one of my strong points. Enjoying a subject definitely motivates me to do the best I can do.