

# COMPUTER SCIENCE

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THIS SUBJECT IS USUALLY DELIVERED AT TORQUAY BOYS' GRAMMAR SCHOOL, HOWEVER, **IF ENOUGH TGGs STUDENTS OPT FOR IT**, IT WILL BE DELIVERED AT TGGs BY OUR TEACHING STAFF.

**The most important aspect of computer science is problem solving; an essential skill for life.**

**Current Teaching Staff:**

Mr R I Green - Head of Department,  
Mrs V Medway

**Examination board and syllabus:** WJEC, Syllabus A-Level Computer Science A500QS

**Entrance requirement:** As not all students have the opportunity to study computing at GCSE, we do not require a qualification in this subject; although if you have taken GCSE we would expect a Grade 6 or above. What is essential is an ability to think logically.

Can you follow flow charts? Understand non-linear sequences of instructions? To succeed in this subject, you need to be able to think clearly and communicate effectively. Perseverance is vital in solving problems independently and when grasping theoretical concepts. Perhaps the most important requirement is that you have an interest in the subject. This will give you the motivation you need to work hard and to enjoy the course.

The aim of the course is to develop the capacity to think creatively, analytically and logically and to apply these skills to create programmed solutions to problems. The course also aims to develop an understanding of hardware and communications, software, applications and the effects of computers on society; as well as skills in analysis, design, implementation and evaluation, alongside project and time management.

As this is a practical subject, there will be a large element of practical work in which you will learn how to write your own code.

**A level outline:**

This course is made up of three modules, one of which is coursework. Each theory module accounts for 40% of the total marks, with the coursework project making up the remaining 20% of the marks.

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## Modules

### Component 1 – Programming and System Development

This module covers programs, data structures, algorithms, logical operations, programming methodologies, systems analysis and design, software engineering and the impact of computer science on society.

### Component 2 – Computer Architecture, Data, Communication and Applications

The second module covers hardware and communication, computer architecture, networking, data transmission, representation, organisation and structure of data, databases, operating and software systems, data security, encryption and integrity.

### Component 3 - Programming Project

This is the coursework element, in which you will discuss, investigate, design, prototype, refine, implement, test and evaluate a computerised solution to a problem of your choice.

This is a substantial piece of work which is started towards the end of year 12 and completed by the February half-term of year 13.

## Top 6 reasons to study Computer Science

1. Nowadays computers impact everything we do.
2. Expertise in computer science enables you to solve complex, challenging problems.
3. Computer science enables you to make a positive difference in the world.
4. This subject offers a pathway to many different types of lucrative careers.
5. Jobs in the computer science industry are here to stay.
6. Expertise in this subject will help you develop your skills, even if your primary career choice is something else.

## CAREERS

Almost every career involves some aspects of computer science, making knowledge and skills in this area becoming much more important. It also offers the opportunity to pursue new and exciting careers such as artificial intelligence, nano-technology, games design, web design and many more.

The tech industry is one of the fastest growing sections of the economy. This trend will only increase as more traditional jobs are replaced by AI systems which need specialists to develop and support them. There is already a major shortage of people with these skills. You could benefit from this as shortage as it is driving up salaries and increasing opportunities for those with the necessary expertise.