



# Computer Science

## Why study Computer Science?

Learn how to program! The area of Computer Science is an exciting one, with major advances taking place in the development of both hardware and software. You will learn about all aspects of computer science. This course is aimed at all students, whether or not you have studied an ICT or Computing qualification at GCSE. We do not assume any previous experience of programming and we will start from scratch. Students who enjoy problem solving often thrive in Computer Science.

## Course Outline

A Level Computer Science has three units:

1. Programming, Data Structures, Algorithms, Theory of Computation
2. Data Representation, Computer Systems, Computer Organisation and Architecture, Consequences of Uses of Computing, Communication and Networking, Databases, Big Data, Functional Programming
3. A practical project

The course will cover problem-solving and using a computer to help with problem-solving tasks. It will include some advanced electronics, logic circuits, truth tables, systems control, robotics and artificial intelligence, finite state machines, algorithm design, relational databases, systems analysis, data structures, networking and cyber security. The biggest emphasis will be learning how to write computer software. There will be a large amount of direct hands-on experience, using modern computers together with industry-standard software.

## Assessment

Students are assessed by two exams at the end of Year 13 worth 80%, plus 20% awarded for a practical project. The first of the exams involves editing a computer program and writing new instructions as part of a practical exam on the computer.

## Head of Learning

Mr M D Latty

## Departmental Staff

Mr J Shervey

## Exam Board

AQA A Level Computer Science

## Where are they now?

Recent students of Computer Science at CRGS have gone on to study:

- Games Technology (UWE Bristol)
- Engineering (Cambridge)
- Computer Science (Imperial College London)
- Computer Science with Maths (Manchester University)
- Physics (Oxford)
- Degree Apprenticeship (PWC)
- Apprenticeship with Senior Weston Aerospace
- Biomedical Science (UCLAN)



## Frequently Asked Questions

*Q. Is any previous knowledge required to study this subject?*

Students should have at least grade 6 in GCSE Mathematics. The course is aimed at all students, whether or not you have studied a Computing qualification at GCSE. We do not assume any previous experience of programming and we will start from scratch. Students who enjoy problem solving often thrive in Computer Science and the syllabus has some overlap with Maths (number bases) and Physics (logic gates and Boolean algebra).

Students are required to meet the General Entry Requirement of a minimum of 4 GCSEs at grade 6 with at least GCSE grade 4 in English Language.

*Q. What opportunities are there for Extended Learning?*

In year 13, students will undertake a practical project on a topic of their choice. Students may use this as an opportunity to carry out research into an area of Computer Science that is of interest to them, to develop a programmed solution to a problem that is based in another subject or area of interest, or even write their own game. As there are no language restrictions on this task, students may also learn a new programming language as part of this task.

*Q. What facilities are there?*

The computer rooms at the Sixth Form's York Street site contain networked computers running Windows 10 and MS Office as standard, all with Internet access. For programming tasks, we code in C# using Microsoft Visual Studio. Computer rooms are also available for students to use outside of lesson times. We also have access to physical computing resources including logic circuit boards, Arduino and Raspberry Pi.

## Exam Board Specification

AQA A-Level Computer Science (7517) [www.aqa.org.uk](http://www.aqa.org.uk)

## CRGS Sixth Form Admissions

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