St Mary Redcliffe
and Temple School

Computer Science

# Computer Science

Exam board: OCR

Specification no.:   H046 (AS) / H446 (A Level)

This is a two year linear A level course - The AS content forms the first half of the A level content and can be assessed at the end of Year 12 to provide an AS Level qualification if the student is dropping the subject and believes they can get a strong grade. Otherwise the two years of content are assessed at the end of Year 13 to give the A level grade.

Course Delivery:

Computer Science is taught using a mixture of theory lectures and practical 'hands on' exercises. Whilst students are issued with a textbook, it is expected that students will read around the subject area, and perform independent research. Students have to produce coursework projects for assessment by examiners, which demonstrate their practical interpretation of their theoretical knowledge. Although time is allocated for coursework, it is expected that students will also do substantial work in their own time. There are a number of set tests throughout the course to measure the students' understanding, and prepare them for the final examinations. Homework is also set and is a mixture of theory and practical programming work.
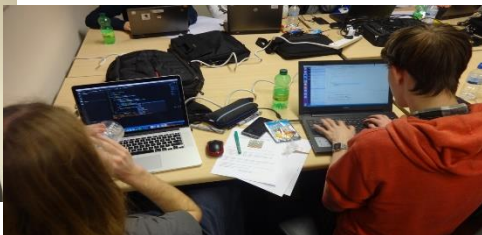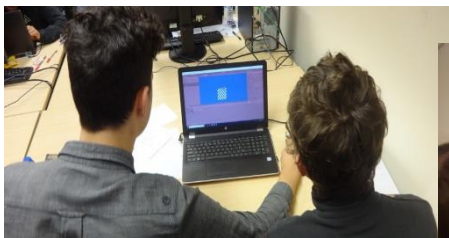
Course Content:

Computing Principles (01)

50% of the AS assessed by a written paper

Topics included in this unit:

- Characteristics of contemporary processors, input, output and storage devices
- Software and software development
- Programming
- Exchanging data
- Data types, data structures and algorithms
- Legal, moral, ethical and cultural issues

Algorithms and problem solving (02)

50% of the AS assessed by a written paper

- Elements of computational thinking
- Problem solving and programming
- Algorithms

Year 13 content:

Computing Principles (as above) (01)

Algorithms and problem solving (as above) (02)

Programming Project (03)

Each student has to complete a programming project for the course. They need to go and independently find a problem that needs a computational solution. They will then go through the systems development lifecycle process to fully analyse, develop, test and evaluate a suitable solution.

Students can choose whichever programming language is most suitable for their solution and their expertise. This is a great opportunity for students to become resilient and organised learners. They need to take total ownership of the project and it will be worked on in school and for homework. Students will start working on this project in Year 12 and it will continue into Year 13.
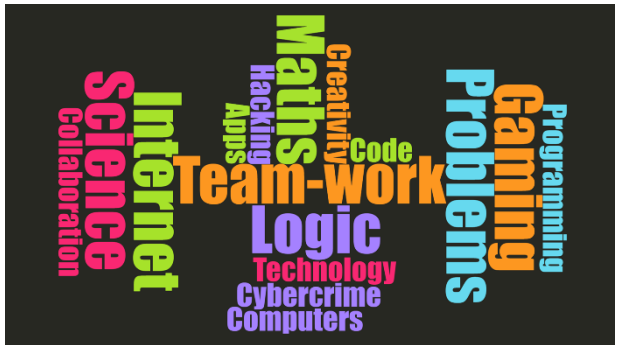
Why choose Computer Science?

Technology is embedded in every aspect of our lives.

Computer Science is being used help solve many of the world's biggest problems

Growth in this sector is predicted to continue to grow!
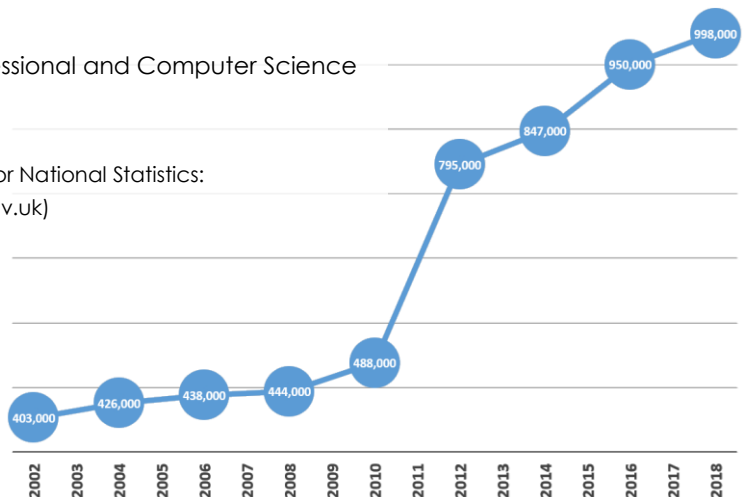
Did you know the computer games industry is bigger than the film and music industries combined?

Growth in IT professional and Computer Science jobs in the UK

(Data from Office for National Statistics: https://www.ons.gov.uk)

Frequently asked questions:

In this section we try to summarise those questions we always get asked at open evenings

Is Computer Science popular at Redcliffe?

It is getting more popular. As more and more students take Computer Science at GCSE they are seeing the potential that the subject has and we have seen increased numbers in the last few years taking it as an option at A-level.

Who will teach me?

Mrs Murfin and Mrs Jacobs will teach you. They have both been teaching A-level for many years and have been delivering this A-level specification since it began in 2015

How many lessons do I have a fortnight?

You will have 10 lessons a fortnight. Nine of these are taught to you directly in a classroom whilst your '10th' lesson is one not directed by a member of staff but where a room is made available for you to complete independent study.

Is Computer Science a lot of work?

The simple answer is Yes! You need to be organised and diligent from the start. One of the biggest pieces of work you will complete in the programming project (information on this in the leaflet) it is important to build and develop your knowledge and understanding of all of the theory aspects of the course but also to practice and build your practical programming skills from the start.

When do I complete any independent study / homework?

We strongly suggest you use free periods as well as time at home. Those people who are disciplined at school always do better.

Do I need to be good at Maths to do well in Computer Science?

There are certain units/topics in the two year course that have mathematical elements and where a sound mathematical knowledge would be helpful.

Entry requirements:

A Level 2 IT or Computing qualification is not required but should be passed at grade 5 / Merit if taken. Evidence of interest and involvement in computing is expected. At least Grade 6 grade in one of Maths and Science/Physics is required and Grade 5 in the other of these, as this is a course which requires a good level of technical and logical thought.

Skills & personal qualities required / developed by course:

Students must be interested in understanding how a computer works internally. They should observe, and be aware of, the use of computers in society, enabling them to include practical examples of computing in their examination responses. They will be expected to apply and adapt their knowledge to answer questions about systems that they may not necessarily have experienced directly.

Resources:

All students will be issued with a textbook, and have access to computer hardware and software for their coursework projects.
It would be advantageous if students had compatible hardware and software at home to help them progress their projects.

Recommended reading / websites:

OCR Computing for Alevel – Hodder Education
Magazines such as Computing / Computer Weekly
Newspapers and Television news – awareness of IT
The exam board (OCR) website

For further information: Contact Mrs R Murfin, Head of Computer Science