**GCSE COMPUTER SCIENCE**

1 GCSE Award

**Subject Leader:** Mrs Ellis

**Exam Board / Specification(s)**: AQA Computer Science (8520)

**Aim**:

**What is Computer Science?**

We like to say that Computer Science teaches students how to think more logically and how to solve problems more effectively. As such, its lessons are applicable well beyond the boundaries of Computer Science itself. Computer Science is also, more generally, the study of information. How can it be represented? With what algorithms can it be processed?

Perhaps the simplest answer is that Computer Science is defined by the problems to which it is applied. Computer Science empowers students with tools and ideas that can be applied to practically any area of interest to them, both in School and beyond.

Contrary to popular belief, Computer Science is not about programming, even though students do learn how to program. Programming languages are tools that Computer Scientists use or create in order to solve problems of interest to them.

**Why Study Computer Science?**

Computing is part of everything we do! Computing and Computer Science are part of just about everything that touches our lives, from the cars we drive to the movies we watch. Understanding different dimensions of computing is part of the necessary skill set for an educated person in the 21st century. Whether students want to be a scientist, develop the latest Social Network, or just know what it really means when someone says “the computer made a mistake”, studying computing will provide students with valuable knowledge and a transferable skill set.

Expertise in Computer Science enables students to solve complex and challenging problems in a creative and innovative way, and is a discipline that offers rewarding and challenging possibilities for a wide range of people regardless of their interests. Computing requires and develops capabilities in solving deep and complex problems requiring imagination and creativity. Developing quality computing solutions is a highly creative activity, and Computing supports creative work in many other fields - the best solutions in Computing are both elegant and beautiful.

**Computer Science enables you to make a positive difference in the world.**

Computing drives innovation in the sciences (human genome project, AIDS vaccine research, environmental monitoring and protection to mention just a few), and also in engineering, business, entertainment and education. If students want to make a positive difference in the world, they should study Computer Science.

**Computing offers many types of lucrative careers.**

Computing jobs are among the highest paid and have the highest job satisfaction. Computing is very often associated with innovation, and developments in computing tend to drive it. The possibilities for future developments are expected to be even greater than they have been in the past.

Expertise in computing helps you even if your primary career choice is something else.

Having a GCSE in Computer Science will provide students with a foundation of knowledge, problem-solving and logical thinking that will serve as a competitive advantage to them in their education and future career.

**Future opportunities in computing are without boundaries.**

Computing is one of those fields where it is almost impossible to predict what will happen next. This is why we cannot even begin to imagine all the ways that you can make a contribution to it and it can make your life’s work exciting and real.

**Outline/Structure of Course:**

Paper 1: Computational thinking and problem solving

Exam: 1.5 hours - 50% of total GCSE marks

A mix of multiple choice, short answer and longer answer questions assessing a student’s practical problem solving and computational thinking skills. Questions on computational thinking, problem solving, code tracing and applied computing as well as theoretical knowledge of computer science.

Paper 2: Written assessment

Exam: 1.5 hours - 50% of total GCSE marks

A mix of multiple choice, short answer, longer answer and extended response questions assessing a student’s theoretical knowledge.

One 20 hour coding task – logged evidence

The development of a computer program along with the computer programming code itself which has been designed, written and tested by a student to solve a problem. Students will produce an original report outlining this development.

**Resources**

Taught in the *Turing Centre*, students have access to state-of-the-art hardware and software. Using our self-hosted cloud servers, students will learn to operate in virtual Linux environments, using a professional tool-chain that includes the Python programming language, command-line text editors and industry-standard version control systems.

**What the students say**:

*“Computing is by far the best subject I have chosen for GCSE. All in all, computing is a challenge but this does not mean that it isn’t enjoyable.”*

*“It is my favourite subject this year and I am really enjoying putting together my controlled assessment project.”*

*“Computing is a truly exquisite subject, it is a useful and challenging subject but is most certainly rewarding once you get to grips with it.”*

*“The best GCSE choice I made."*

*“Computing GCSE is both challenging and fun. Computing is suitable to both academic and creative students as there are plenty of chances to express those skills throughout the course. The Hackathon trips we go on give us the opportunity to learn much faster than we would in a classroom environment and network with other coders and developers. I have made many new friends both inside and outside of School thanks to Computer Science”*