

Computer Science at Samuel Whitbread Academy

Intent

At Samuel Whitbread Academy, we aim to excite students about Computer Science. We want to show them how important technology is and just how much influence they can have over it. We hope to empower them with the knowledge, skills, and motivation to ask important questions, solve complex problems and create innovative software applications.

Throughout our KS5 curriculum, there are opportunities for pupils to develop their teamwork, ingenuity, and determination. Technology is an evolving expanse, and we aim to immerse students in a broad investigation of all that it covers, from the ethics of Artificial Intelligence (AI) to the mathematical systems of modern encryption and to the development of Virtual Reality (VR) worlds.

Studying Computer Science at A Level is a valuable experience that provides students highly sought-after knowledge and skills. At Samuel Whitbread Academy, we focus on developing a strong understanding of the key theoretical topics that underpin computer systems and how to apply problem solving and programming skills that will allow them to innovate. Ultimately, we want students to understand how imperative technology is and appreciate the opportunities it offers.

Our curriculum aims to nurture inspired individuals who not only understand how technology works but have the vision and power to create it.

Implementation

A Level Computer Science at Samuel Whitbread Academy is taught through two disciplines, exclusively by subject specialists. One side of the course focusses on the theoretical understanding of computer systems and the other on the application of computational thinking and programming skills. Throughout the course students are encouraged to explore the links between both sides.

Units related to computer systems are taught using a range of techniques that ensure students are not only able to understand the content of the course, but are able to articulate this and explore it further through independent study and meaningful discussion with their peers.

Lessons on computational thinking and programming skills are taught using a range of contexts, allowing students to explore exciting areas of computer science and develop expertise in a range of programming languages and paradigms.

Towards the end of Year 12 students are encouraged to explore a range of interests so that they can choose a problem to investigate for their NEA in Year 13. This offers students an excellent opportunity to spend a significant amount of time in and out of class focussing on an area of computer science that interests them most.

Impact

As a department, we measure the impact of our curriculum by the outcomes at the end of the course and the number of our student pursuing careers and further study in related fields.

It is our aim that by the end of the A Level Computer Science course, students:

- Enjoy applying computational thinking skills in developing the solutions to complex problems.
- Can confidently program in varied environments, with a range of languages and in multiple paradigms.
- Have a strong understanding of theoretical topics that will support them in their use of technology beyond school and further education.
- Will have successfully worked through a significant programming project, developing their understanding and interest in a specific topic.
- Understand how technology can be developed to solve problems, entertain and innovate.
- Are able to debate and evaluate important ethical, social and environmental issues related to technology.