



## Computer Science Curriculum Intent

### **Subject vision:**

Computer Science is an exciting subject in a growth area for jobs. We aim to combine the key concepts related to computational thinking, information technology and digital literacy to provide students with knowledge and skills across the main elements of computer science. At its core is computational thinking, problem solving, and logical thinking skills used by computer scientists and programmers to solve complex problems, which can also be applied to real world issues in many other subjects and disciplines. Writing programs allows students to put these skills to the test, and to develop their ability to work through problems and find solutions. Technology has a large impact on our lives so it is also important to consider the ethical, moral and safety issues it can bring.

### **We deliver our curriculum intent on a subject level by:**

At KS3 we build upon the work that has been covered within the KS2 curriculum. Students begin to understand and apply the key concepts and principles of computing, as well as using a range of commonly used software packages. Students are encouraged to work more independently to plan creative solutions to problems. This stage of the curriculum contains both computing and information technology units of work, so that students can make an informed decision about their pathway should they wish to study either subject at GCSE level.

At KS4 we purposely offer courses in both Computer Science and BTEC Digital Information Technology so that we can accommodate the needs and interests of all students. Computer Science builds upon the programming knowledge gained at KS3, so that students are able to program from the ground up by designing and developing solution to a wide range of scenarios. Students gain a deeper understanding of how the different devices that make up a computer system work, as well as consider the moral, ethical and legal issues that exist through the use of computers.

The KS5 Computer Science course follows on directly from that studied at GCSE level. Students cover many of the topics seen in the GCSE course but at greater depth. Students extend their programming skills and become even more independent following the life cycle of their own project. They gain a deeper understanding of how computers and the internet work, as well as considering the consequences of computing.

### **Enrichment**

At KS3, students have the opportunity to attend after school coding clubs using for example, BBC Microbits, Raspberry PIs or programming in Python itself. These clubs are often run by 6th Form students.

At KS4 we have run trips to Glyndwr University to allow student to program using Lego MindStorm kits.

Students have the opportunity to enter programming competitions.

In *Computer Science*, students '**Achieve success**' by:

Encouraging high aspiration and a love of learning	<ul style="list-style-type: none"> <li>• Students in all Key Stages are challenged to exceed their own targets and to reflect on how to improve their work.</li> <li>• Students are encouraged to work independently especially when programming to develop their problem solving and logical thinking skills.</li> <li>• Lessons are designed to be both interesting and stimulating.</li> </ul>
Maximising progress and potential	<ul style="list-style-type: none"> <li>• Students are immediately introduced to subject pathways through every key stage, university courses and routes into the world of work.</li> <li>• Regular assessments allow students to see their own progress and reflect on this.</li> <li>• At KS4 and 5 students are offered support outside of the normal lesson time, and parents/carers are contacted where students are not achieving their potential.</li> </ul>
Providing rewarding learning experiences	<ul style="list-style-type: none"> <li>• Lessons cater for a variety of learning styles with a range of resources. The problem solving and logical thinking skills that students develop are transferrable skills that can be used across the curriculum.</li> </ul>
Offering diverse opportunities	<ul style="list-style-type: none"> <li>• Teachers ensure that cultural awareness is promoted in the classroom and in teaching resources. The consequences of computing is considered, including aspects such as the digital divide.</li> </ul>
Recognising and celebrating all achievement	<ul style="list-style-type: none"> <li>• Positive recognition often occurs after assessments and are celebrated by use of praise but also by contacting home via email or with reward postcards.</li> <li>• Online resources often have instant feedback and can introduce competition within the class.</li> </ul>

In *Computer Science*, students '**Value Others**' by:

Contributing to a safe school environment	<ul style="list-style-type: none"> <li>• Computer Science contributes to the development of student cultural capital through the provision of online safety lessons, as well as discussions focusing on legal, ethical, social and environmental issues along with the health and safety around technology.</li> <li>• Students are aware of how to report online safety issues.</li> </ul>
Showing tolerance, respect and fairness	<ul style="list-style-type: none"> <li>• Through appropriate behaviour management and teaching strategies in lessons, tolerance, respect and fairness is promoted towards staff, students and the equipment being used.</li> </ul>
Listening to and respecting others' views	<ul style="list-style-type: none"> <li>• Students are encouraged to be active in discussions and consider the opinions of others.</li> <li>• Students are encouraged to participate actively during lessons without the fear of being incorrect.</li> <li>• Discussions are managed to ensure equality of participation.</li> </ul>

Appreciating and embracing diversity	<ul style="list-style-type: none"> <li>• Posters and literature promoting diversity such as women in Computer Science.</li> <li>• When discussing careers, use of facts and figures to highlight the staffing diversity that exists with the field.</li> </ul>
Being an active member of our school and local community	<ul style="list-style-type: none"> <li>• Use of Sixth Form students to run enrichments opportunities lower down the school.</li> <li>• Students playing an active part in Open and Option Evenings.</li> </ul>
Co-operating with others	<ul style="list-style-type: none"> <li>• Students working in groups to accomplish tasks and support each other when programming.</li> <li>• Students listen to each other with differing opinions on different parts of the subject curriculum.</li> <li>• Students are encouraged tolerance and respect when hearing other student views.</li> </ul>