# GCSE Computer Science – Year 11

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 & 2 |
|---|---|---|---|---|---|
| Topics | Block 1 – Understanding the machine<br><br>Block 4 – Programming fundamentals | Block 2 – Computer hardware and software<br><br>Block 4 – Programming fundamentals | Block 3 – Networks<br><br>Block 4- Programming fundamentals | Block 3 – Networks<br><br>Block 4 – Programming fundamentals | Block 5 – Impact of Computer Science technology<br><br>Block 4 – Programming fundamentals |
| Learning components | <u>Block 1</u><br>CS1: Boolean Logic<br>CS2: Von Neumann Architecture<br>CS3: Low-level languages<br>CS4: Binary numbers<br>CS5: Data representation of characters<br>CS6: Data representation of images<br>CS7: Data representation of sound<br>CS8: Data compression<br><br><u>Block 4</u><br>CS28: Algorithmic thinking<br>CS29: High-level languages<br>CS30: Programming basics<br>CS31: String manipulation | <u>Block 2</u><br>CS9: CPU Performance<br>CS10: Embedded Systems<br>CS11: Primary storage<br>CS12: Solid-state storage<br>CS13: Magnetic storage<br>CS14: Optical storage<br><br><u>Block 4</u><br>CS32: Selection<br>CS33: Counter-controlled iteration | <u>Block 3</u><br>CS17: Types of networks<br>CS18: Network hardware<br>CS19: The internet<br>CS20: Network topologies<br>CS21: Network protocols<br>CS22: Social engineering<br>CS23: Malware<br>CS24a: Network security<br>CS24b: Cyber resilience<br><br><u>Block 4</u><br>CS34 – Condition-controlled iteration | <u>Block 3</u><br>CS25: SQL & data structures<br>CS26: Defensive design<br>CS27: Testing<br><br><u>Block 4</u><br>CS35 – Computational thinking<br>CS36 – Subprograms | <u>Block 5</u><br>CS40: Copyright<br>CS41: GDPR<br>CS42: Computer Misuse Act<br>CS43: Software licensing<br>CS44: Privacy<br>CS45: Digital Divide<br>CS46: Sustainability<br>CS47: Online services<br>CS48: Artificial intelligence<br>CS49: Crime<br>CS50: Medicine<br><br><u>Block 4</u><br>CS37: Searching and sorting algorithms.<br>CS38: Data structures<br>CS39: File handling |

| | |
|---|---|
| Linked learning | • Students build on knowledge, skills and understanding from Computer Science based units in KS3.<br>• The design of the two components allows overlap. For example, a topic in Unit 2 will draw on prior knowledge from Unit 1. |
| SMSC links | • 293. Develops pupils to become responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults.<br>• 293. Ensures an inclusive environment that meets the needs of all pupils, irrespective of age, disability, gender reassignment, race, religion or belief, sex or sexual orientation, and where no discrimination exists, for example in respect of wider opportunities for pupils. |

| | |
|---|---|
| | • 293. Develops pupils' confidence, resilience and knowledge so that they can keep themselves mentally healthy.<br>• 293. Enables pupils to recognise the dangers of inappropriate use of mobile technology and social media |
| Literacy | • Subject specific terminology<br>• Decoding command words used in the exam (e.g. explain, describe…)<br>• Vocabulary by writing answers that require a more extended response. |
| Numeracy | • Arithmetic (Add, Subtract, Multiply, Divide, Exponentiation and Modulus (remainder)<br>• Logical (AND, OR and NOT)<br>• Comparison (Equal to, Not equal to, Greater/Less than<br>• Using algorithms to solve complex problems. |
| Enrichment | • Computing Club that runs after school each week.<br>• Educational trips (e.g. Girls in IT (Swansea), Bletchley, Cadbury World) |
| Impact | • Students are required to develop a range of techniques using a wide range of software packages and apply them effectively when developing their own digital artefacts or to solve complex problems.<br>• Using real-life problems that will help students become more logical in their thinking and have the confidence to break down complex problems into smaller and more manageable tasks that make it easier to solve, a skill that is transferable and can be applied to all subjects and beyond education. |

| Ways to support student learning in this subject |
|---|
| • Encourage the use of technology at home, provide an opportunity for students to use our facilities that they may not be provided with at home.<br>• Homework completed on time and to the expected standard.<br>• Help students understand the 'bigger picture' – technology is becoming more prominent in our everyday lives and because they can use a smartphone they assume they know everything they ever need to about the subject.<br>• CLIMB sessions put in place for underachieving students.<br>• Action plans that can be used as in-class intervention.<br>• Access to online platforms that allow them to develop their coding skills.<br>• Encourage discussion of Computer Science issues that arise in the news.<br>• Encourage self-assessment and reflection using personalised learning checklists (PLCs)<br>• Encourage students to use GCSEPod and Smart Revise to consolidate knowledge and build on recall skills.<br>• Purchase CGP revision guides and workbooks for independent revision and practice. |