

# Computing

**“Personal computers have become the most empowering tool we've ever created. They're tools of communication, they're tools of creativity, and they can be shaped by their user.” *Bill Gates***

## Summerhill students will be **valuable members of society**

Nowadays, computers and digital devices play a major role in the daily lives of all people, young and old.

Technology can be used both positively and negatively. Summerhill students will understand how to act appropriately and responsibly when using digital devices and how to deal with any abuse that they may witness.

Computer programs and hardware innovations are often the solution to solve societies' problems. At Summerhill, students identify the impact of such innovations, both positively and negatively, and recognise the role that computers play within society.

## Summerhill students will be **skilled communicators**

Computers and the internet have revolutionised the way that society communicates. People can now communicate across the world instantly, through the use of digital technology.

Students at Summerhill experience a fully multimedia experience and are given the opportunity to access and explore a range of software applications to develop a variety of effective communication skills.

Through working as a team on challenging coding activities, students cultivate effective communication skills, vital for successful careers.

## Summerhill students will be **knowledgeable**

The Computing curriculum is designed to support students in attaining a broad knowledge in a range of computing disciplines. Computer coding is experienced deeply, along with theory aspects around how a computer works, how data is represented and how networks are constructed.

Students develop an awareness of how to use digital devices safely and securely.

They are able to analyse problems in computational terms and develop problem solving skills and logical thinking processes that will enable them to use technology 'for good'

## **Our curriculum is underpinned by four key values:**

- Courage** – doing what is right; being truthful; trying new experiences; taking risks in the pursuit of personal development
- Ambition** – having the highest aspirations and expectations of ourselves / others; being brilliant in all we do; having belief that challenges can be overcome with the right attitude and hard work
- Respect** – thinking about the way we interact with others; being considerate to ourselves, others and the environment; responding to expectations and working together in teams
- Effort** – investing time and energy to achieve success; always giving our best in everything we do; demonstrating resilience

# COMPUTER SCIENCE

Year	Key Features	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7	All students Mixed ability 1 single period per week	Fundamentals of computing and eSafety  Depending on prior knowledge this may be extended to cover required ICT skills  ESafety relates through to global learning topics	Counting for computers: Binary, hexadecimal	Computer programming: Sequencing, selection, iteration  This develops character building, through resilience and independently problem solving	Hardware and software: Part of a computer, peripherals, input-process-output	Databases: Data types, SQL	The internet: History of the www, networks, HTML  This includes eSafety and social skills when using the web
8	All students Mixed ability 1 single period per week	My Digital World: Sensors, internet of things	Introduction to Python: Print, input and if statements, data types.  This develops character building, through resilience and independently problem solving	Spreadsheets: Advanced formulas. Macros	Back to the future: The history of computers, Cryptography  This covers great British Computer Scientists eg Tim Bemers-Lee	Create a game: Project to research, design, create, test and evaluate a computer game  This develops character building, through resilience and independently problem solving	
9	Optional  1 double period per week	Cyber Security  eSafety relates through to global learning topics	Advanced Python: Input, conditional statements, loops  This develops character building, through resilience and independently problem solving	Impacts of technology upon society: Legal, ethical, environmental and privacy impacts.  Social implications relate to global topics	How computers store data: Images, Audio, Compression	Mobile App Development: Create an interactive mobile phone app.  This develops character building, through resilience and independently problem solving	Networks: Types of networks, topologies, parts of a network  Further study of British Computer Scientist How Turing helped to win the war, yet was unjustly persecuted for being homosexual

Year	Key Features	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
10 GCSE	Optional 3 periods per week  GCSE Computer Science (AQA 8520)	Computer Systems 1: Parts of the Computer. Von Neumann, Logic Gates, Operating systems	Computer Systems 2: Python Programming Key skills and assessment style practice challenges  This develops character building, through resilience and independently problem solving	Data Representation: Binary, hexadecimal, how images and sounds are stored as binary, compression	Networks: Types of networks, network topologies, protocols, security.	Computer Science Practical Assessment. 20 hours	
11 GCSE	Optional 3 periods per week  GCSE Computer Science (AQA 8520)	How technology impacts society: Legal, ethical, environmental, privacy impacts  Social implications relate to Global topics	Algorithms: Common algorithms, such as sorts and searches  This develops character building, through resilience and independently problem solving	Revision and exam practice	Revision and exam practice		