

# 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 often the solution to solve societies' problems. Summerhill, students will be able to 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 will experience a fully multimedia experience and be given the opportunity to access and explore a range of software applications to develop a variety of effective communication skills. They will understand and use Computing-specific terminology accurately.

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

## Summerhill students will be **knowledgeable**

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

Students will develop a detailed awareness of how to use digital devices safely and securely.

They will be 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 2 single periods per week	Familiarisation of Summerhill's computer network and apps available.  Clear messaging in digital media.	Vector Graphics: Creating images for a purpose.	Python: Learning to code in a text-based programming language.	Pixels and Bitmaps: Image editing	Python: Using Turtle to explore graphics	Counting for computers: Binary, hexadecimal
8	All students Mixed ability 1 single period per week	My Digital World: Sensors, internet of things	Python: Print, input and if statements, data types, loops	Modelling data using spreadsheets: Formulas and Functions.	Back to the future: The history of computers, Cryptography	Puzzles: Binary, Encryption and RLE	Game Design.
9	Optional  1 double period per week	Cyber Security.	Artificial Intelligence & Advanced Python: Input, conditional statements, loops, functions	Spreadsheets: Advanced formulas. Macros	Pixels and Bitmaps: Advanced image editing	Databases - Queries	Advanced Python: Creating Functions and manipulating arrays.
10 GCSE	Optional  3 periods per week	Computer Systems 1	Computer Systems 2	Networks: Types of networks, network topologies, protocols, security	Data Representation: Binary, hexadecimal, how images and sounds are stored as binary, compression	Relational Databases and Structured Query Language (SQL)	
	GCSE Computer Science (AQA 8525)	Programming & Algorithms					

Year	Key Features	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
<b>11 GCSE</b>	Optional 3 periods per week  GCSE Computer Science (AQA 8525)	How technology impacts society: Legal, ethical, environmental, privacy impacts	Algorithms: Common algorithms, such as sorts and searches	Revision and exam practice	Revision and exam practice		
		Programming & Algorithms					
<b>10 IT</b>	Optional 3 periods per week  ICT	Input & Output devices	Functionality of different software	Services provided by IT	How data and information is used and transferred	Legal, moral, ethical, cultural, and environmental impacts of IT and the need for cybersecurity	Input & Output devices
		Planning, creating, modifying, and using spreadsheets (2.1)		Planning, creating, modifying, and using databases (2.2)		Planning, creating, and modifying an automated document (2.3)	
		Planning, creating, manipulating, and storing image (2.4)		NEA preparation		NEA 2.4	
<b>11 IT</b>	Optional 3 periods per week  ICT	NEA 2.2 NEA 2.1	NEA 2.3	Different types of connectivity	Revision		