

WEEKLY CLASSES · CENTURY CITY CAMPUS, CAPE TOWN

Coding & Robotics Curriculum

The Sheen Academy coding and robotics curriculum introduces learners to the foundational concepts of coding and robotics, emphasising hands-on learning and problem-solving. It aligns with the South African Department of Basic Education's initiative to integrate coding and robotics into the national curriculum.

CAPS ALIGNED



Intro Class

Ages 6-8

Build & play



Junior Class

Ages 9-11

Code & sense



Explorer Class

Ages 12-18

Connect & design

Ages 6-18

60 minutes, weekly

Max 8 learners

R280 a lesson

Tuesday – Saturday

The curriculum is structured into three weekly classes, each tailored to an age group and skill level, with specialist modules layered on top. It draws its outcomes from the CAPS Coding and Robotics curriculum, focusing on computational thinking, the engineering design process and digital literacy.

Three classes, one learning path

A learner joins the class that matches their age and moves up as they master it. Every lesson is 60 minutes, once a week, in a group of no more than eight.

Intro Class

Ages 6-8

FOCUS

Basic structural design, the first logic structures, and controlling how a robot moves.

HOW WE TEACH IT

In the Intro class, children learn through hands-on projects — including unplugged activities away from a screen — that encourage exploration and discovery. Unplugged projects build coding and robotics concepts playfully, reinforcing learning through inquiry, experimentation and reflection.

SKILLS DEVELOPED

Programming concepts: An introduction to algorithms, loops, and spotting and fixing mistakes.

Design and construction: Hands-on building with beams, gears and plug-and-play electronics.

Operation of robots: Applying elementary maths — numbers, shapes, patterns — to make a model move.

Digital concepts: Digital safety, and using a device with confidence.

Junior Class

Ages 9-11

FOCUS

In-depth structural design, conditional logic, and real block coding on the sheenbot[∞] board.

HOW WE TEACH IT

Children learn through a structured input → processing → output cycle, using sensors, controllers and actuators to grasp sequential logic. Lessons are interactive and multimodal, reinforcing coding concepts through hands-on exploration, problem-solving and real-world applications.

SKILLS DEVELOPED

Block-based coding: Building foundational coding concepts on the sheenbot Canvas platform.

Robotic design: Building and programming robots to follow lines and control angles, using basic physics and maths.

Sensors and actuators: Reading the world with light, temperature, humidity and distance sensors — then acting on it.

Problem-solving: Applying physics and mathematics to real-world scenarios.

Explorer Class

Ages 12-18

FOCUS

Advanced structural design, connected systems, AI program architecture, and automation through data.

HOW WE TEACH IT

Inquiry-based learning takes a learner-centred approach: learners actively explore complex problems through self-directed inquiry, building a deeper understanding of coding and robotics. It encourages critical thinking, creativity and problem-solving, preparing learners for advanced STEM challenges and real-world applications.

SKILLS DEVELOPED

Advanced coding: Using both block-based and contemporary programming languages, including MicroPython.

Connected systems: Radio, Wi-Fi and MQTT — making boards talk to each other, and to a cloud dashboard.

Industrial design principles: Replicating real-world scenarios, and designing for the needs of others.

Project-based learning: An emphasis on problem-solving, critical thinking and collaboration.

Compare side by side

The same questions answered for each class, so the differences are clear at a glance.

	Intro Class Ages 6-8	Junior Class Ages 9-11	Explorer Class Ages 12-18
This term	Machines that move	Smart designs	Internet of Things
How long they stay	Until they are ready for Junior — usually around age 9	Until they are ready for Explorer — usually around age 12	For as long as they wish, through to the end of high school
How they code	Coding cards and unplugged sequencing; simple on-screen blocks	Block coding on the sheenbot Canvas platform	Blocks and typed code — MicroPython
What they build on	Plug-and-play bricks, beams, gears and levers	sheenbot [∞] controller with the Tinker Kit and LEGO parts	Multi-board projects, plus drones and the hydroponics system
Sensing & connectivity	Buttons and buzzers — simple inputs they press and outputs they hear	Light, temperature, humidity and distance sensors	Board-to-board radio, Wi-Fi and MQTT to a live dashboard
What they create	A machine that moves, and the confidence to explain how it works	A smart device of their own design	A connected system with a dashboard that other people can use
How we assess	Observation and show-and-tell	End-of-term quiz and a build review	End-of-term exam, plus a project defended to the class

Curriculum structure

Weekly classes follow the South African school terms. Each term closes with a short assessment and a project the learner presents to the class.



Innovative curriculum

Our curriculum combines current robotics technology with foundational STEM principles, mapped onto the CAPS coding and robotics outcomes.



Hands-on learning

Children learn best by doing. Every lesson ends with something the learners have built, coded and tested.



Expert instructors

Our instructors are experienced educators with a background in STEM education and robotics. With no more than eight learners per session, every child receives individual attention.

Continuous learning, not a course with an end date

There is no fixed number of lessons and no point at which a learner has to finish. Each term introduces a new kit and a new course, so a child who starts at six can continue right through to the end of high school, taking on more advanced projects each year.

Intro Class

Ages 6-8



A new kit every term

Learners rotate through our full hardware range — robotics kits, sensor kits, drones and the hydroponics system — so the work stays fresh and challenging year after year.



Skills that build on each other

Each term builds on the one before. A learner who joins at eight can be writing MicroPython and debugging a live data dashboard by thirteen — the result of steady, continuous practice.



It grows with them

Older learners progress to specialist modules, a FIRST® competition squad and our teaching-assistant programme — experience that strengthens a university application.

Fees are billed per lesson on a month-to-month basis. There is no contract and no upfront term payment; families decide each month whether to continue.

This term



Intro Class Ages 6-8

Machines that move

Sequencing away from a screen, then building a model and making it move — ending with a working machine the child explains to the class.



Junior Class Ages 9-11

Smart designs

Devices that react to the world — a fan that reads temperature, a light that waits for dusk, an alarm that catches a door opening — then one the child designs alone.



Explorer Class Ages 12-18

Internet of Things

Boards that talk — over radio to each other, over MQTT to a cloud dashboard the learner builds — finishing on a design brief written for somebody else.

Specialist modules

Modules that complement the weekly classes, offered as a term theme, a holiday programme or a partnership with a school. Each one uses the same hardware your child already programs in class.



IoT & smart systems Ages 12+ · 8 lessons

Boards that talk — over radio to each other, and over MQTT to a cloud dashboard the learner builds themselves. The current Explorer term module, also delivered to schools and universities.



Market Makers — financial literacy Ages 10-15 · 12 lessons

Money, markets and risk built rather than explained: a wallet on one board, then a classroom trading floor where boards broadcast prices, then a live market feed with a class dashboard.



Cash Crop — running a business Ages 10-15 · 12 lessons

Run a small business on a board: cost a grow bench, price it, sell it — and meet the four numbers every owner lives by, which are not the same number.



Hydroponics & agritech Ages 10+

A real automated grow unit — pumps, sensors and the dashboard that runs them. Installed at partner schools, with a five-session facilitator programme for their teachers.



Math in Motion — thinking with the turtle Ages 7-13 · 20 lessons

One big maths idea made visible at a time — angles, the 360° rule, symmetry, coordinates, scaling — by drawing it with a turtle on the board display.



Design thinking Ages 10+ · 8 lessons

Empathise, define, ideate, prototype, test. A repeatable way to attack a problem before writing a line of code, ending in a project the team defends.



Competition teams Ages 6-18

FIRST® LEGO® League Explore and Challenge, and a FIRST® Tech Challenge squad. Teams train on separate days, so it is extra time rather than a clash with weekly class.



Drones & flight Ages 14+

COMING SOON

Flight control, laser and optical-flow sensors, stable hover and programmed flight paths. It has run as a holiday camp; a weekly module is in preparation.

Ignite your child's imagination with robotics

TRANSFORMING YOUNG MINDS INTO INNOVATORS

Weekly classes run Tuesday to Saturday at our Century City campus, and we run hands-on workshops every school holiday. Start with a free trial lesson — there is no obligation, and you are welcome to sit in and watch.

Ages 6-18

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