



Robotics Enrichment Program — Fall 2026

Stone Hill Middle School · Grades 6–8

Twelve weeks. Students first learn how robots actually work — grip, gears, and the trade between speed and strength — then **design and build their own machine** and program it to sense and react. The term ends with a **sumo tournament in front of families**.

When: Wednesdays, 6:00–7:00 PM **Starts:** September 16 **Ends:** December 9
Sessions: 12 (no class Nov 25) **Where:** Stone Hill Middle School **Teams of:** 3 students
Platform: LEGO MINDSTORMS EV3 **Experience needed:** none

Learn it, then build it

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| 1 | Sep 16 | Build and test. Build your first robot and drive it exactly one metre. Measure the error, then fix it. |
| 2 | Sep 23 | Grip and strength. Why some robots push and others spin. Traction, friction, and surviving a hit. |
| 3 | Sep 30 | Speed or strength? Gear ratios — trade speed for pushing power, then see which wins a tug of war. |
| 4 | Oct 7 | Design your fighter. Now you choose — gearing, wheels, shape. Build the robot you keep. |
| 5 | Oct 14 | Make it move. Motors and sequence. Drive an exact distance on purpose — then try it by hand and compare. |
| 6 | Oct 21 | Repeat and turn. Loops and accurate turns. Drive a repeatable path without babysitting it. |
| 7 | Oct 28 | Feel a hit. The touch sensor — the moment a robot knows it has found its opponent. |
| 8 | Nov 4 | See the edge. The colour sensor — detect the ring boundary and stop before driving out. |
| 9 | Nov 11 | Find the opponent. The ultrasonic sensor — measure distance and close in. |
| 10 | Nov 18 | Decide. If/else logic. At the edge, back off. On contact, push. |
| 11 | Dec 2 | Design the edge. Wedges, plows and low profiles — the attachment that wins matches. |
| 12 | Dec 9 | Tournament. Round-robin sumo in front of families. Awards for design as well as for winning. |

By December, your student will be able to

- Build a working robot from loose parts and explain why it is built that way
- Make a design choice and defend the trade-off behind it
- Write a program that moves it accurately and reacts to what it senses
- Find and fix code that is not doing what they expected

What we provide

Everything — robot kits, laptops, sensors and spare parts come with us each week. There is nothing to buy and nothing your student needs to bring, and each student keeps their engineering notebook. Sessions are led by an LCPS substitute teacher with an adult assistant and two high-school robotics mentors. Students work in fixed teams of three, rotating through builder, programmer and tester roles.