Challenge Manual 2019

1 Eligibility

1.1 Participants must be between the ages of 8 to 16 years old as of 31 December 2019 (open to Primary and Secondary students).

1.2 The minimum number of participants per team is 2.

1.3 The maximum number of participants per team is 3.

2 Game Objective (s)

2.1 The aim is to build and program a robot to race to the finishing line in the fastest timing.

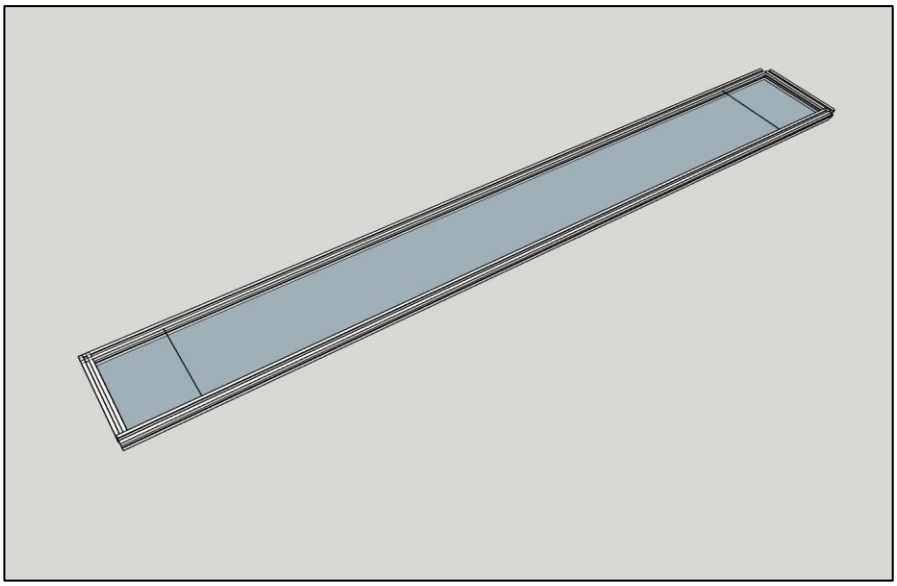
3 Playfield Design

3.1 The straight path will be 500cm in length

3.2 There will be a barrier with a height of 2 LEGO® Bricks on both sides of the lane.

3.3 The image below is only a sample. The actual playfield may not be exactly as shown below, but will conform to the given design.

Figure 1: Playfield map sample



4 Game Play

4.1 Students will be required to **build their robot on the spot.**

4.2 There will be 2 lane to run the robots. Students may choose to run their robot on either lanes

4.3 Teams will be required to scan their tag at the counter before running their robots.

4.4 If teams run their robot without scanning their tag, the timing clocked will not be officially recognized.

4.5 Students have unlimited attempts to clock the fastest timing within the given time for the event.

4.6 After each attempt, students will be required to join the queue to have another attempt. Students are not allowed to queue without their robots.

4.7 Students are allowed to modify or improve their robots after each attempt.

5 General Rules

5.1 The size of the robot has to be within 250mm X 250mm X 250mm when fully extended. Teams whose robots do not conform to the given dimensions will be asked to rebuild their robots.

5.2 Students are not allowed to bring any pre-built robots into the preparation venue. All the parts for the robot should be disassembled and in their initial state (not pre-built) when the assembly time starts.

5.3 Students are not allowed to use any form of Instruction sheets/guides to assemble their robot, whether digital, printed, written, or pictorial format.

5.4 There will be no time limit given to build the robot. Students are allowed to attempt the run once they are ready and that their robot has passed the robot size check, within the designated competition time.

5.5 Any official LEGO part (brick, Technic) is accepted

a. There is no limit to the number of parts used.
b. No modified/custom printed parts allowed

5.6 The only allowed battery for NXT/EV3 must be an official **LEGO rechargeable battery**.

5.7 The referees will have the final say in any dispute

5.8 The referees have the right to disqualify any team that shows defiance or unacceptable behaviour, including inappropriate words and/or behaviour towards other teams, audience members, referees, or organizing committee members.

5.9 Strictly NO sharing of robots with other teams. Teams found to be sharing robots will be disqualified.

6 Scoring

6.1 An automated timer will be recording the timings of each attempts. The timer starts when the robot crosses the starting line. Once the robot crosses the finishing line, the timer will stop.

6.2 The official timing for each attempt will be taken as the timing recorded by the automated timer ONLY. Any other timings eg. manually-operated stopwatches and video recordings will not be considered.

6.3 The best timing of each team will be stored in the system. Teams can keep trying to beat their previous timings. If their latest timing is slower than their previous timing, only the faster timing will be stored.

6.4 Incomplete run

a. If a robot stops in the middle of the track and is unable to complete the run, the maximum timing of 60.00 seconds will be given.

Example 1:

Team A	
1st Attempt	03.35s
2nd Attempt	03.14s
3rd Attempt	04.12s

Only the 2nd attempt will be stored in the system

7 Awards list

Hypersonic Award	**Champion**
	1st Runner-up
	2nd Runner-up
Supersonic Award	**3rd Runner-up**
	4th Runner-up
	5th Runner-up
Sonic Award	**6th Runner-up**
	7th Runner-up
	8th Runner-up

Best Mechanical Design	**Champion**
	1st Runner-up
	2nd Runner-up
Featherlight Award (Awarded to the lightest robot)	**Champion**
Hulk Award (Awarded to the heaviest robot)	**Champion**

7.1 During lunch time, teams have to place their robot at the quarantine table for judging awards

a. Mechanical Design
b. Featherlight Award
c. Hulk Award

7.2 Criteria for Featherlight and Hulk Award

a. Robot will be weighed during the lunch quarantine time
b. Robot must be able to reach the end of the track to qualify for the award.
c. After lunch, teams only get one try to qualify for the above award.
d. Subsequent runs will only be used for the speed awards
e. In the event that there are multiple robots with the same weight, the race timing will be taken in to consideration.
f. Teams are only allowed to use the **official LEGO rechargeable battery** for EV3/NXT

Last Updated: 16 Sep 2019