Programmable Line Tracing robot

LINE FORMULA

GAME RULES

Section 1 Participants

Article 1

1.1 One member per team.

1.2 There are 2 age categories :

1.2.1 **Junior** for 8 to 14 years old

1.2.2 **Senior** for 15 to 19 years old

1.3 Every team may or may not have teacher/mentor by each team must have only 1 person (1 teacher or mentor can supervise multiple team).

1.4 Each participant can play only one team.

Section 2 Playing field and components

Article 2 Playing field dimension

2.1 The size of the playing field is 400cm x 250cm. approximation.

2.2 The playing field is made of printed PVC or Vinyl.

2.3 The width of the black line is approximately 18 to 25 mm.

2.4 The actual playing field will be revealed on the day of the contest.

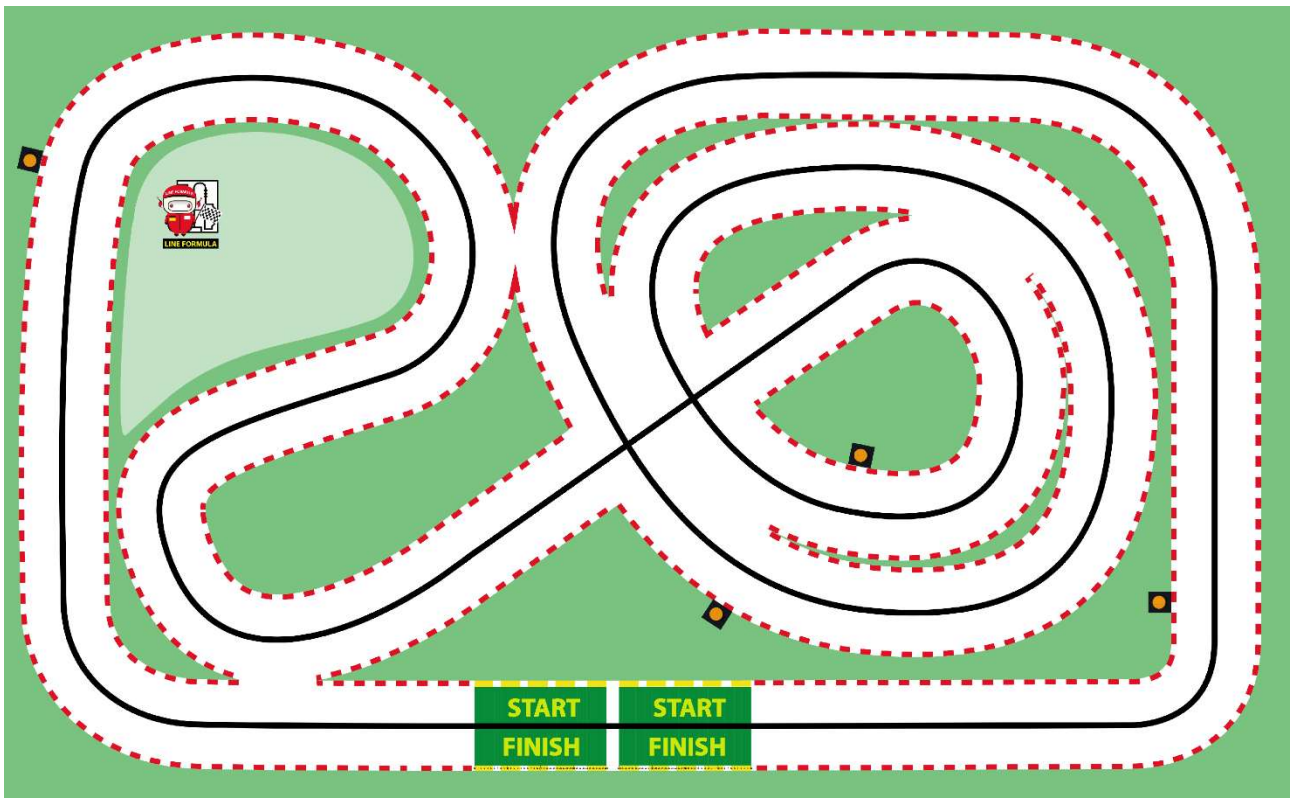

Figure 1 - The illustration provided is an example of the Programmable Line Tracing Robot Playing Map. The official competition map will be disclosed on the practice day.

Section 3 Robot requirements

Article 3 Technical Requirements

3.1 The robot's dimensions must not exceed 25 x 25 cm in width and length, with no height restriction. It must be designed to fit within a 25 x 25 cm box, which will be provided on the day of the competition.

3.2 Participants are permitted to use wheeled robots of any type. Participants are permitted to use any robotic platform of any nature so long as the programmable microcontroller/s is the main processing unit of the robot.

3.3 **For JUNIOR**

3.3.1 Each robot is allowed a maximum of 2 motors for locomotion. The use of brushless motors and any fans that aid in robot movement is prohibited.

3.3.2 Participants are permitted to use up to 4 element of sensors for a robot with no restrictions on the type of sensor.

3.4 **For SENIOR**

3.4.1 Each robot is allowed no limit number of motors for movement. The use of brushless motors and any fans that aid in robot movement is prohibited.

3.4.2 Participants are permitted to use no limit number of sensors for a robot with no restrictions on the type of sensor.

3.5 The robot must be programmed for autonomous functionality. Participants should be equipped to address potential interference from radio waves or infrared light during both practice and the actual competition.

3.6 Robot cannot be separated or expanded while playing the game.

3.7 No limit on the source of all mechanical parts and accessories. It can be hand-made, formed from 3D printer, or modified from toy.

3.8 Fixing screws and nuts or any fixation component in the robot must be securely firmly. If during the playing have any piece dropped or broken onto the playing field, the referees will not remove it and allowed to continue the competition. Referees cannot hold responsible for consequences during removal of a loose piece from the playing field.

3.9 No limit for the computer properties used to program the robot.

3.10 No limit for power supply features.

3.11 There is no weight limit.

Article 4 Prohibition

Any equipment used to damage the competition area is not permitted.

Section 4 The Competition

Article 5 Rankings

5.1 Each team is granted a minimum of 2 attempts, with the most successful run being considered for ranking.

5.2 Ranking will base on running time to complete the mission. If the best running time is equal, the referee will consider the based on other competition round. The team who has better running time in other competition round will be get better rankings.

5.3 Teams placed within the 13th to 20th ranks (up to a maximum of 8 teams) will be honored as **3rd Runner-up**, earning them a Copper medal.

5.4 Teams placed within the 9th to 12th ranks (up to a maximum of 4 teams) will be honored as **2nd Runner-up**, earning them a Bronze medal.

5.5 Teams placed within the 5th to 8th ranks (up to a maximum of 4 teams) will be honored as **1st Runner-up**, earning them a Silver medal.

5.6 Teams placed within the 2nd to 4th ranks (up to a maximum of 3 teams) will be honored as **Gold award**, earning them a Gold medal.

5.7 The top-ranking position will be awarded **the title of "Champion"**, earning them a Champion trophy and Gold medal.

Section 5 Game competition

Article 6 Starting and Mission

6.1 Participants must place their robot at the designated starting point in any direction, ensuring that no part of the robot extends beyond the start line.

6.2 The robot must be powered on before the run begins. The timer starts immediately when the robot crosses the start point.

6.3 The robot must complete the required number of full laps along the designated line course:

6.3.1 Junior Category: TWO full laps

6.3.2 Senior Category: THREE full laps

The robot must then finish at the designated finish point, at which time the timer will stop immediately once the robot crosses the finish point.
Note: The start point and finish point may be the same location.

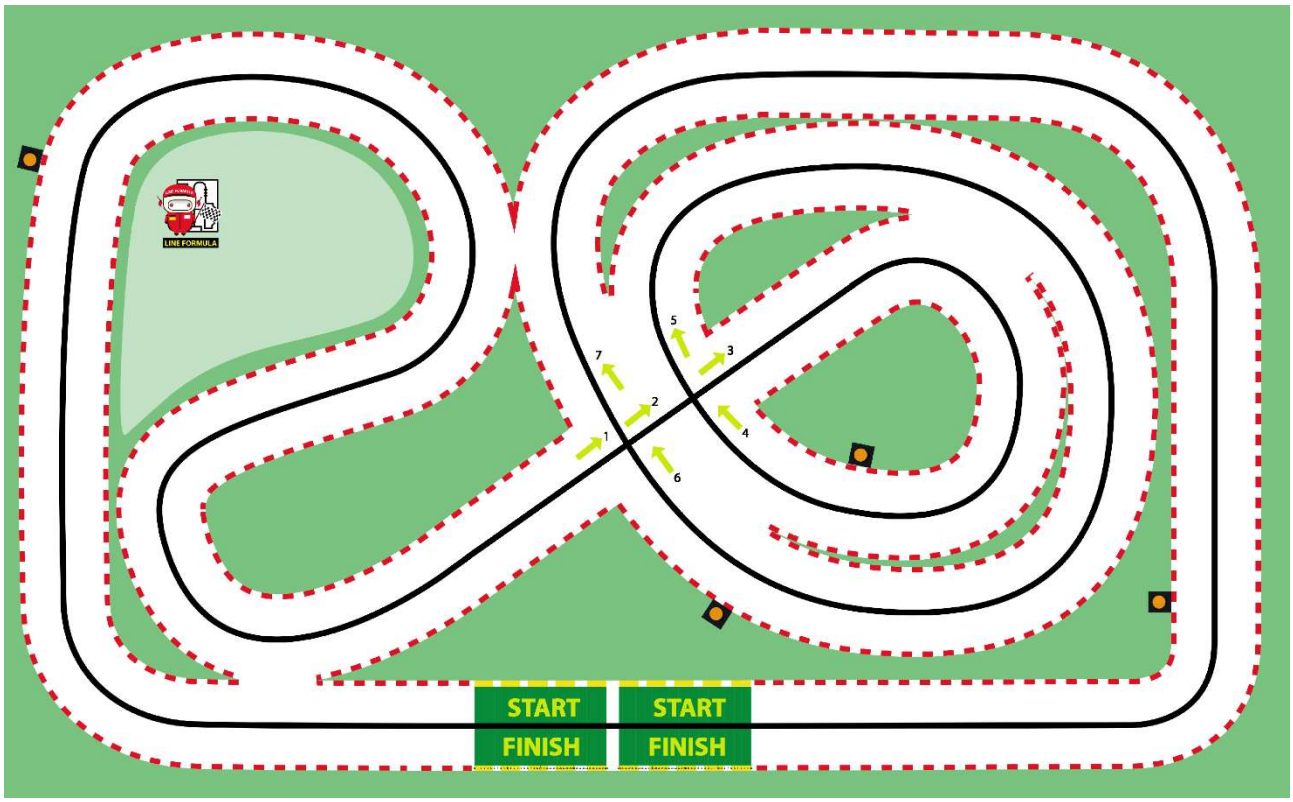

Figure 2 - The first example of moving direction of the Programmable Line Tracing Robot. The moving direction is from Left START point to Right FINISH point.

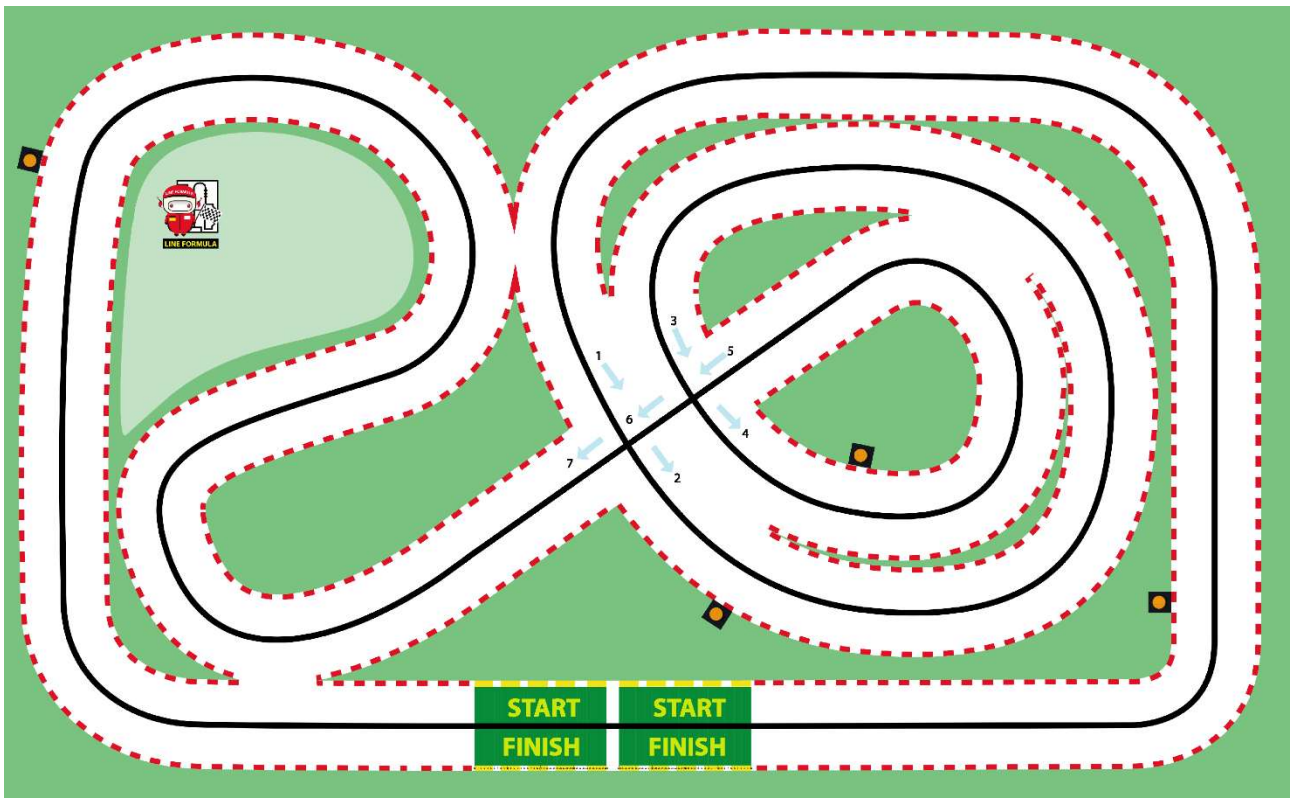

Figure 3 - The second guideline of moving direction of the Programmable Line Tracing Robot. The moving direction is from Right START point to Left FINISH point.

6.4 A complete course is achieved when the robot successfully completes the required full laps (two for Junior, three for Senior) and stops within the designated FINISH area (green block in Figure 1). When this is accomplished, the referee will record the official complete course time.

6.5 If the robot completes the required number of laps but fails to stop within the FINISH area, the referee will still record the finish time, followed by the letter “i”.

Example (Junior Category):

*If a robot completes 2 full laps in 150.1 seconds but does not stop within the FINISH area, **the recorded result will be 150.1i for ranking purposes**.*

Article 7 Pause

7.1 After the robot becomes out of track, it must be returned to the last checkpoint before continuing. During this process, there is no time pause.

7.2 If the participant touches the robot, it must be returned to the last checkpoint before continuing with no time pause.

Article 8 End of competition

The competition will end from :

8.1 The robot reaches the finish point. During the competition, the referee will record the times of the participant's touching the robot to add with their running time for ranking purpose. Each touch results in 5 seconds time penalty.

8.2 Game time is 180 seconds

8.3 The participant asks to end the competition. The referees will record as "Did Not Finish" (DNF).

Section 6 Fouls

Article 9

Any participant who contravenes rules Article 4, 10, and 11 or all is considered foul.

Article 10

The participants who act insulting, abusing an opponent, whether verbally or physically, or letting the robot make noises, express messages, or act disrespectfully, will be disqualified.

Article 11

Any participants who commit any of the following is considered foul.

11.1 Interrupting the opponent's robot.

11.2 Entering the competition area during other team's competition.

11.3 Bring anything into the competition area during other team's competition

11.4 Disrupting the competition without valid justification

Section 7 Punishment

Article 12

Any participant who commits the fouls according to rule Article 9, their time will be added more 5 seconds.

Article 13

If any coach commits the fouls, all the team under their supervision will be disqualified.

Section 8 Damage and Accidents

Article 14 Asking to end the competition

The participant may ask to end the competition if their robot is damaged so that it cannot be used.

Article 15 Repairing Time

The participant can repair the robot anytime during the competition. However, the time will not be paused. Every time of participant touches the robot, added time 5 seconds each.

Appendix: Special Awards for Participants Using INEX microcontroller board and ArTec Robot Kits in WRG 2026

A. Terms and Conditions

A1. Participants who build and compete using any model of ArTec robot kit components, parts, and building blocks in the following competition categories will be eligible to receive additional WRG 2026 medal awards beyond the main competition medals :

A1.1 All One Minute Game categories

A1.2 Programmable Line Tracing Robot (all age divisions)

A1.3 Innovative Robot

A1.4 Incredible Machine

A2. Participants may also use any ArTec robot kit components, parts, and building blocks to compete in any WRG 2026 category for eligibility toward the standard main competition awards.

B. Award Opportunities

B1. Robot teams remain fully eligible for the standard official awards in their respective WRG 2026 competition categories.

B2. For the competition categories listed in Articles A1.1 to A1.4, WRG organizers will separately rank teams using ArTec robot kits to determine additional WRG medal awards under the ArTec Award program.

B3. Teams using ArTec robot kit components, parts, and building blocks may receive both the standard competition award and an additional ArTec Award medal.

Example:

A team may win a Silver Medal in the standard competition ranking and when ranked separately among ArTec robot teams, may achieve a Gold Medal in the ArTec Award ranking. In this case, the team will receive both the Silver Medal and Gold Medal from WRG, along with certificates recognizing both achievements.

2026 WRG ROBOT GAMES