

West Side Robotics
LINE-FOLLOWING RACE RULES

Goal:

- The goal of the Lego Line-Following Race is for a Lego Mindstorms Robot (RCX, NXT or EV3) to be fastest in a race following a track with a randomly wavy black line. The robot will need to be programmed with a line-following program using a downward-facing light sensor or color sensor. We realize that there are many variations to the rules for Lego Robot Line-Following Racing; these will be the rules for this tournament and we ask that entrants read and be familiar with this particular rule set at the time of the tournament, in order to avoid surprises.

Team:

- A “team” is comprised of one or more students who have built a robot for this event. Each team should also have one adult present with the team.
- The robot must be an autonomous robot the team has constructed themselves prior to the tournament to the specifications below. This event is not a workshop where you may build robots after arrival. There will be limited time for adjustments and changes to the robots and their programming during the event. (There is a FREE workshop for help building and programming the robots in the morning prior to the event. See the website for more information on this workshop.)
- Only one team member may enter the racetrack area to start the robot; other team members may watch from outside the racetrack area.
- Each team/robot will be assigned a number on check-in and should have a unique name or identity to be easily recognized by spectators and officials when on the field and when scoring.
- (While this is an ideal “off-season” activity for First Lego League teams, entrants DO NOT have to be made up of FLL team members, and this is also an ideal activity for those with an interest in trying Lego robotics for the first time!)

Robot Construction:

- The racing robot may only be comprised of official Lego parts, which cannot be held together by any means other than the standard Lego construction methods (no tape, glue, stickers, etc.). No homemade sensors, multiplexors, or modifications to Lego elements are allowed. No modification to Lego parts by gluing, cutting or melting is allowed.
- TWO motors with rotation sensors are allowed, and any other sensors manufactured by Lego may be used. No “made for Lego” third party sensors are permitted for this tournament.
- It is encouraged that robots be decorated or themed with Lego parts.
- There will be limited time and space for last minute design improvements and adjustments, however, the robots should be completed at the time of registration, and once check-in takes place, the robot or its programming may no longer be modified. Robot battery should also be sufficiently charged once the robot is checked in.

Robot Size:

- When started on the racetrack, the robot must not be more than 20 cm wide.

Programming:

- A line-following program must control your robot’s motion, using a downward facing light sensor or color sensor to follow a black line. There are multiple examples of various types of line-following programs that can be found online or in books.
- There may be no motorized attachments.
- The robot must be autonomous. No Bluetooth or other wireless control of the robot on the field is permitted.

Robot Restrictions:

- The robot is restricted from destructive action.
- No intentional interference with the opponent robot or the opponent's track is allowed.

- Judges will have the discretion to disqualify any robot whose strategy is deemed to be too dangerous.

Player Restrictions:

- When teams are called to the racetrack for their bout, teams are to present to the field promptly, and each team is to greet the other with a bow or handshake.
- Players on are to behave in a respectful manner, and are not permitted to use profanity or insulting words or actions, or to have their robot use such words or actions. Unsportsmanlike behavior will not be tolerated. Such behavior will result in a violation or disqualification at the judge's discretion.
- Only one team member may enter the racetrack area to start and follow the robot, and restart as needed.

Racetrack:

- For this race, the track will be on a white surface, with two (2) one inch (1") black lines which will be separated by 25 cm or more at all points. The lines will have random and irregular curves from one end to the other.
- The overall length of the track will be between 2 and 2.5 meters.
- The area immediately around this ring, termed the "Racetrack Area", will be marked with tape or cones. Only one player from each team may enter the racetrack area with the robot at the start of the match.

Start of Match:

- One player from each team will enter the racetrack area with the robot and they will greet each other.
- Upon the signal of the judge, the robots will be simultaneously placed at the starting end on their side of their track, with wheels resting off the racetrack.
- Upon the start command from the judge, the players will start the robot program, and then step back from the track. The players may follow their robot along the length of the track in order to quickly retrieve an errant robot. It will not be allowed for any player to step on the track itself at any time, or to kneel or crawl or otherwise be on top of the track.

Match:

- The robots must follow their line on the racetrack until the light/color sensor reaches the far end of the line, and their time will be recorded. The robot may be immediately retrieved by the player once the light/color sensor reaches the end.
- Once both robots reach that end, they will restart in a race back to the starting end on the other track that they did not travel previously, and the time on that leg will also be recorded.
- If a robot leaves its line, it may be taken back to the starting position for that leg and be restarted immediately, without waiting for a judge's signal. The timer will continue to run including restarts on that leg. If the total time exceeds twice that of the opponent on that leg, the time for that leg will be recorded as twice the opponent's time for that leg.

Judging:

- The Judge will determine the winner of each race, and will record the times of each leg, and has the discretion to disqualify any robot or team not meeting the requirements for competition.
- The judge's decision is final, and cannot be disputed once competitors leave the racetrack area.

Championship:

- The Champion will be determined as the robot with the fastest (lowest) total time for the two legs of the race (traveling in each direction once, and each track once.)

Awards:

- Awards will be presented for champion and second-place.

Flexibility of Rules:

- As long as the concept and fundamentals of these rules are observed, flexibility will be allowed to encompass changes in the number of players or other rules changes as deemed necessary by the judges and officials.