

Spring 2009 Robotics Team Contest

Revised Rules – Feb. 27, 2009

These are the rules for the Spring 2009 UH Robotics Team contest held at the Spring 2009 IEEE Chili Cookoff on March 12.

1. Teams

Entrants in the contest are NXT and VEX robot teams who have been learning about robots as part of the UH Robotics Team over the past school year. As an experiment, we may invite additional outside teams to participate.

2. Robots

Robots are restricted to be NXT- or VEX-based designs, using the standard components that come with those kits (no third-party souped up motors, for example). Any software system may be used on the robots.

3. The Track

The contest course will be laid out on two 4' x 8' sheets of white "tile board" (available at Home Depot or Lowe's) forming an 8' x 8' contest area. Black lines will be marked using ¼" black electrical tape. White wall sections will be 8" high, made of white foam board, scored and bent so as to form a curving continuous wall. The layout of the track is given below (ignore the large square at the start/stop line – it will be used in a later contest).

4. The Task

The robot must start completely behind a black line that is 1.5" wide and at least 4" long. When told to start, the robot should start moving forward. It must follow the right edge of a meandering black line that will begin immediately on the other side of the starting line. At times a wall will appear on the right, approximately 8" from the center of the black line, and will continue parallel with the line for a minimum of 6", at which time the line will disappear and the wall continue. (The black line may just stop, or it may drift slowly away to the left.) The robot must then follow the meandering wall. If the black line appears again, the wall will shortly disappear, in which case the robot should return to following the line. If the wall disappears, it will always be after the line has been present 8" away for a minimum of 6". The minimum radius of any line curve will be 8", and of any wall curve will be 2'.

Summarizing:

- If there is a line, but no wall, follow the right edge of the line.
- If you are following the line and a wall appears on the right, you should start following the wall because the line will shortly disappear.
- If you are following the wall and it disappears, it will only be after a line has reappeared, so start following the line.

- If you are following the wall and it disappears, it will be after a minimum 6" straight overlap with the line.
- If you are following the line and a wall appears, there will be a minimum 6" straight overlap.
- At times the black line may fork: Follow the right edge, taking the right fork.
- At times a second black line may merge from the left, causing no problem if the robot is following the right edge of the line.

The robot should continue following the lines and walls until it crosses a 12" black "stop line", 1.5" thick, perpendicular to its path. This will be during a line-following segment, not a wall-following segment. The robot should come to a complete stop immediately on the far side of the stop line.

3. Scoring

Scoring of the run will be based on milestones reached, then time if there is a tie. Points are awarded and accumulated throughout the run, with one point awarded for each of the following milestones (those places where the points are awarded are marked with red dots on the route diagram below):

- Cross start line and follow the black line
- Line-to-wall transition (each)
- Wall-to-line transition (each)
- Difficult line maneuver (each)
- Detect stop line and stop
- Extra point for stopping completely past the stop line, but not off the track!

One point deductions for:

- Each wall bumped (not destroyed), but robot continues on successfully.
- Each single loop off the line, but only if robot re-engages the line and continues successfully.

A robot's run ends when it either successfully reaches the stop line, or it becomes clear that it is not going to get there (it gets lost, runs off the track) in the opinion of the judges.

Each robot will get two chances to complete the course, and its best run will be taken as its final score. In the event of a tie between two or more teams, their second best scores will be used to break the tie. In the event that there is still a tie, the robot with the shortest run time will win.

Printed certificates will be awarded to the winning team.

□ = 2"x2" | 1' | = Wall | = 3/4" Black Line ● Point earned

