

# 2011 Howard County 4-H Robotics Competition – 8 Aug 2011

## *In General:*

- a. This is a LEGO MINDSTORMS NXT competition. Only NXT brick-based designs will be scored.
- b. Each participant shall bring a fully constructed, programmed, and charged robot to the competition; no additional parts or computers will be provided.
- c. All robotic control software must be created by the participant; shared or copied software will not be scored.
- d. Each challenge course will be available for a limited time prior to the competition for final calibration of sensors.
- e. Only LEGO components may be used to construct robots.
- f. No tape, glue, or other adhesives of any kind may be used in the construction of robots.
- g. Robots must fit completely within the 12"x12" START square.
- h. Robots must work autonomously (no human may remotely control or touch the robot) during the execution of the challenge.
- i. Once activated, each robot must leave the START square, accomplish the challenge by itself, and return to the START square by itself.
- j. Scoring for each individual challenge attempt will cease at an elapsed time of five minutes.
- k. Participants will be allowed two attempts complete each challenge.

## *Clovers: Just Build It!*

Assemble a LEGO WeDo project (from the WeDo manuals) of your choice.

## *Juniors: Street Sweeper*

Ten 1" wooden cubes will be placed somewhere on the Track (see below). Your robot's mission is to move as many of them as possible into the START square. There is no requirement to follow the Track, but it might be easier.

## *Intermediates: Decisions, Decisions...*

Just like the Junior challenge, the same ten 1" cubes will be placed on the Track. But this time two of them will be somewhere on the Cross line. Can your robot move them all back to the START square without getting lost?

## *Seniors: Another [LEGO] Brick in the Wall*

Just like the Intermediate challenge, your robot must move the ten 1" cubes to the START square, and two of them will be on the Cross line. But your robot will have to navigate around fixed walls (6" wide by 5" tall) centered on the Track and Cross line in five different locations.

## *Scoring:*

100 points will be awarded for each cube judged to be completely within the START square at the end of an attempt. The timer stops when last cube is completely in the START square, or at the five minute time limit. A time bonus (500 points minus the number of elapsed seconds) will be added to the 1000 point base cube-moving score only if all ten cubes are in the START square. This is a total of 1500 points possible if your robot moves at the speed of light!

## *The Challenge Board:*

The challenge area is 48" square. It is surrounded by a 5" high wall and painted white. The Track is a 2" wide black stripe at least 5" from the wall. The START square is a 12" square painted green. All measurements are +/- 1".

The Cross line appears dashed in this diagram because it will not be present during Junior competition. It will be on the board for Intermediate and Senior runs. When it is on the board it will actually be the same as the rest of the Track: a 2" wide **solid black** stripe.

## *Questions?*

Send email to Jeff Jones  
at [Z06gun@gmail.com](mailto:Z06gun@gmail.com).

