

# Mobile Robotic Arm

**Group A (Regular entries): 50kg max**

## **I. General rules of competition**

IRHOCS 2015 Mobile Robot Arm contest (as the “Contest”) will be conducted under the following rules, formulated by the 2015 IRHOCS competition committee (as the “Committee”), and applies only to this competition.

1. Robot basics:
  - a. Wheels:

Robot must be driven on omni wheels or mecanum wheels.
  - b. Weight limit:

Up to 50kg maximum. There is no minimum weight limit.
  - c. Dimension:

Robot dimension must not exceed 60cm in length and width while stationary. Robots are allowed to have retractable mechanisms that while at its full extension must not exceed 100cm in length, width or height. And if in any circumstances the robot can NOT be fitted in side the Tournament’s certified scale for dimension, the robot will be eliminate for the Tournament.
2. Robots must carry it is own power and control systems. It can NOT be manipulate with any wire, radio, infrared devices.
3. Wheels or any part of the robot that contacts with the arena must not be covered with adhesives that will sticks to the arena floor, like double-sided tapes.
4. It is recommended to use a KNR series system for the robot’s control system, while other platforms are also allowed, and Contestants can also design their own on arm control systems and computer vision libraries.
5. Robots should have an emergency abort bottom easily accessible to the referee whom can stop the tournament for any infringements of the Game Rules.

## II. Facility and Equipment

1. Arena Size:  
400cm x 200cm (figure 1), marked with PVC tapes (20mm in width)
2. Zone A serves as the starting area, the black PVC tape marked 60cm square, where it also served as the finishing area. (Black PVC tape is part of the base.)
3. Zone B is the designated work platform, 100cm x 50cm in dimension. Underneath it is a 45cm x 3cm x 6cm aluminum bar. On top of it are four snooker balls (black, blue, yellow, and red), 5.7cm in diameter, and 150g-170g in weight. All the snooker balls are placed on top of a MATRIX or TETRIX made ball stand.
4. Zone C, D, and E are all regular work platform, 50cm x 50cm.

Figure 1

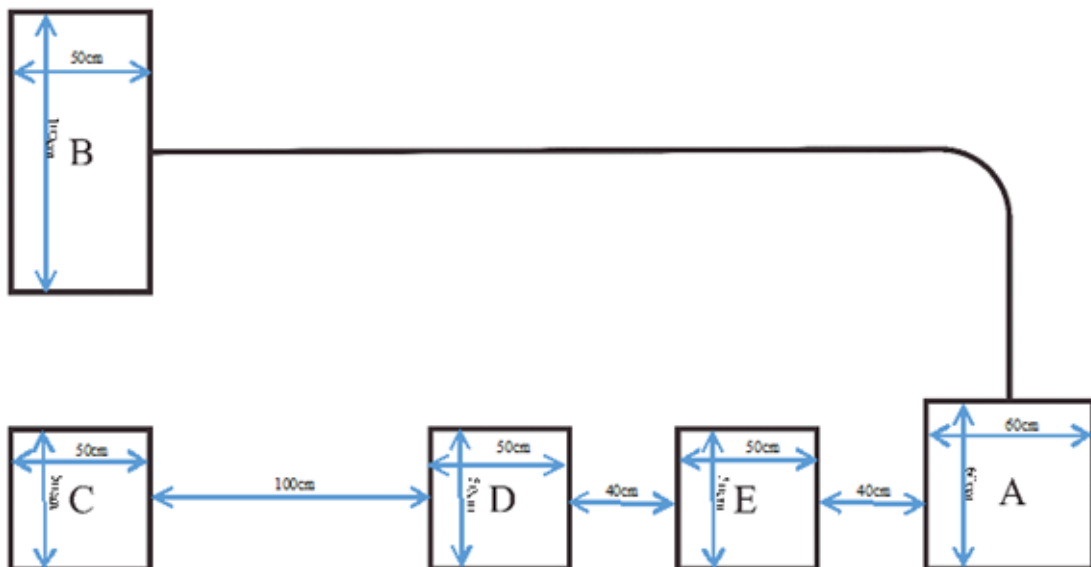
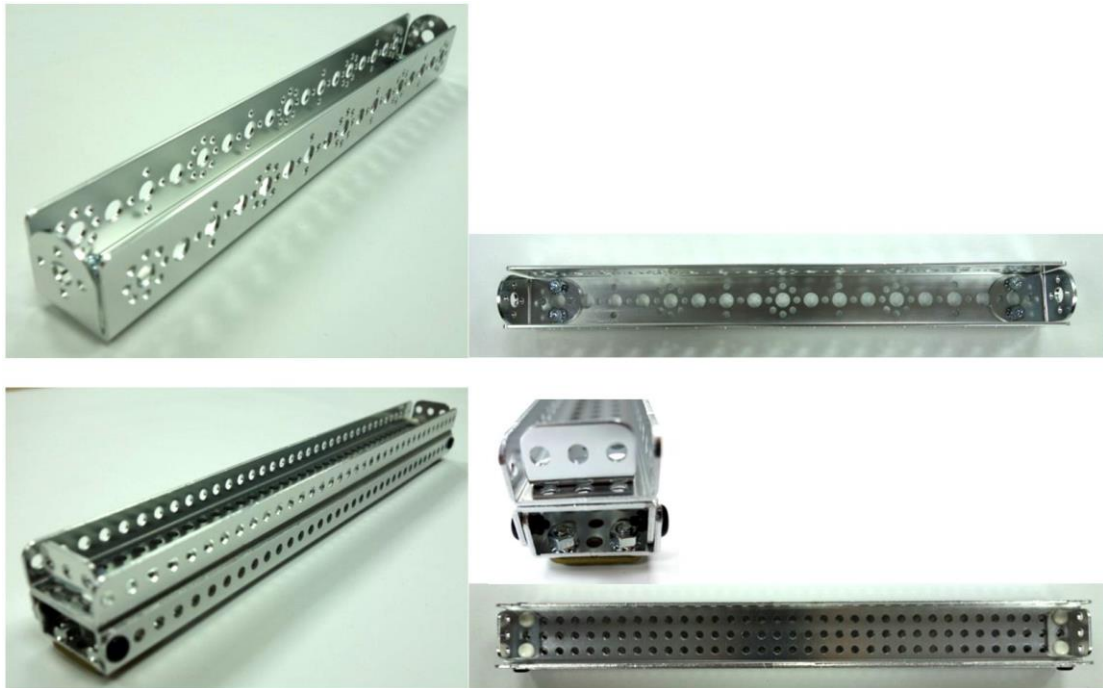


Figure 2



### III. Game Rules

1. During the tournament, robots will move from Zone A to Zone B along black PVC tape, grab a snooker ball from a stationary ball stand with its robotic arm, place them in each designated area within Zone C, D, E, return to section A when completed.
2. The position of each snooker ball is randomly balloted by the referee prior the tournament.
3. The committee will time each match. Each team will have **3mins to complete the challenge and an optional 2min extra** for preparation while a second chance for a new timing, and receive a collective score. Each team can have two operators present during the match.
4. **10 points** for leaving Zone A when started. If it's not entirely clear (comes in contact with PVC tape) will result in 5 points. 0 point if the robot did not move.
5. **10 points** for moving from Zone A to Zone B along black PVC tapes.
6. **10 points** for grasping a designated snooker ball and clear from Zone

B, if the designated snooker ball partially within Zone B results in 5 points.

7. **20 points** each for placing the snooker ball in the correct Zone, **10 points** if placed in an incorrect Zone. And in each situation if the snooker ball contacts with PVC tapes will results in half the points.
8. **10 points** for move back completely into Zone A when times up, **5 points** for partially inside Zone A perimeter.
9. Tournament took place under ambient environment factor (lighting, temperature, humidity etc.). Contestant can't require making adjustments on that.
10. If teams have the same score, ranking is decided by the fastest time recorded.
11. Circumstances out of bound will be up to the referee to decide.