

RoboMaker Challenge Rules 2015

(Primary)

This document contains the official rules for RoboMaker Challenge 2015 and is released by the RoboCup Singapore CoSpace Technical Committee. The rules contained in this document have priority over any translations.

All teams must read the RoboMaker Challenge Rule (This document), carefully and understand the requirements and procedures for all aspects of the competition and judging.

GENERAL RULES

1. AGE GROUP

Age Group	Age as on 2015
Primary	07 – 12 years old

2. GAME DESCRIPTION

- 2.1 In RoboMaker Challenge, each team will be given one RoboMaker kit during the training workshop.
- 2.2 Each team is restricted to have one robot to participate in the Challenge. The robot must be identified with a team ID or flag during the competition.
- 2.3 Team Setup
 - (a) All teams are allowed to test their robots on the race course during setup only.
 - (b) Teams are allowed to modify the robot design during the setup before the start of the challenge (presentation and RoboRace).
- 2.4 Format
 - (a) The challenge is formed by team presentation, qualification test, and robot parade competition. The schedule will be released on the competition day by the organizing committee.
 - (b) The same robot must be used for presentation, qualification test and the robot competition race. Failure to do so will be subject to penalization or disqualification for the challenge.

3. ARENA

- 3.1 The Racing track has a black line with the width of 1.8 cm. The design of the actual racing route will be released on the competition day.



4. ROBOTS

4.1 Base

The basic design of the robot consists of a battery holder, a chassis, motors, electronics controllers and sensors. Teams should follow the instruction manual to complete the necessary mechanical mounting and electrical connections.

4.2 Design

- (a) Teams are encouraged to add more electronic components for aesthetic purposes only.
- (b) There is no restriction of number of controllers, sensors or motors on each robot.
- (c) Each robot must be able to carry a small flag with a team name and number, which will be given if the robot passes the qualification test.
- (d) Teams are encouraged to design and build their own robot casing. Using any material (E.g. cardboards, 3D printing and paper) to allow the robot to have more aesthetic appeal. Teams are encouraged to have a theme for their robot design. Robot should keep the external design (decoration) during racing competition.

4.3 Size

(a) Both the width and the height of the robot must not exceed 20 cm.

4.4 Weight

There is no restriction on the weight, however it is important to note that the weight of the robot will affect the performance of the robot during the race. It is desirable to keep the robot as light as possible for optimum performance.

4.5 Programming

- (a) Robot must be fully autonomous.
- (b) It can be started manually.
- (c) Robot must have a reliable program to follow a black line on a bright surface.
- (d) Robot must have the ability to detect a vehicle in front of it and stop, and the automatically restart when the vehicle in front has cleared.

4.6 Battery

The robot uses six AA size batteries. Teams must bring their own batteries for the competition. No batteries will be provided by the organizer.

5. QUALIFICATION TEST

Teams must bring the robot to the Qualification Test Booth to check the following:

- The robot size: It must be within 20 cm(W) x 20 cm(H)

6. DOCUMENTATION AND PRESENTATION

One of the objectives of CoSpace and RoboMaker Challenge is to promote the culture of sharing and presentation. Teams are requested to prepare an **A1 poster** and also give a presentation to judging panels.

6.1 A1 Poster

All participating teams will only be given a presentation booth at the competition venue. Teams are required to prepare an A1 poster to share about their team and robot. All posters are required to be submitted to the organizer by the stipulated time. Teams are free to use any form of visual aid for their presentation. Template for the poster design will be released to the participating team during the training workshop.

6.2 Presentation

The teams will do a presentation to a panel of judges on their robots for duration of 5-8 minutes. Teams are required to share their robot making learning experience, theme of their robot design, understanding of robots, etc.

7. ROBOT RACING

7.1 Robot Control

- (a) The real robots must be controlled autonomously, but started manually by humans.
- (b) The use of a remote control to manually control real robots is not allowed.

7.2 Human

- (a) As the space around the competition fields is limited (and crowds can result in accidents to robots) teams must designate one member who will act as "captain". In any case, only the team captain is allowed to communicate with the referee.
- (b) No human can touch the robot during the competition, unless otherwise stated by the referee.
- (c) Teams must report to the referee booth immediately after the end of their presentation. Failure to report will forfeit the RoboRace and no points will be awarded for the race.

7.3 The Racing

- (a) The teams will be given **2 minutes** of preparation time to change batteries, do calibration and testing of the robot before the start of the race. The robot must be ready to run as the race will start immediately after the **2 minutes** preparation time.
- (b) The robot will start within the area designated before the starting line. The lap time will only start when the robot passes the starting line and the lap time will end when the robot passes the finishing line. The referee will keep the record. The maximum timing of the run is **8 minutes**.
- (c) A robot is considered to fail in completing the race course when
 - the robot did not follow the intended race track and direction.
 - the entire robot leaves the race track.
 - the robot did not cross the finishing line within 8 minutes
 - the robot is stationary for more than 60 seconds
 - the robot is incapable and not making progress on the race (at the discretion of the referee)
- (d) No re-run is allowed in the event where the robot fails to complete the race course.

7.4 Time-out

In principle, a game will not be stopped during gameplay. The referee can stop a game when he needs to discuss an issue/problem with the OC/TC. The game will be called "time-out" in this case.

7.5 Scoring

- (a) Scoring of the teams is based on the ranking of robots in the race. The team who ranked first will be awarded 30 points; the 2nd team will be awarded 28 points and so on.
- (b) The teams will be ranked accordingly to the race timing. The fastest team will be ranked first. In the event of two or more teams that successfully complete the race course with the same timing, they will be ranked equally.
- (c) Teams that fail to complete the race course will be ranked based on the zone where the robot is considered as “fail to compete”.

8. JUDGING CRITERIA

The RoboMaker Challenge will be judged based on team presentation and robot race challenge.

Scoring Category	Scope	Points
Presentation (70%)	Presentation Consistency (voice level, pace, clarity, etc)	10
	Content Knowledge (able to show sufficient understanding in the topics presented)	25
	Robot Design (aesthetic, innovative, choice of material, adequate support)	25
	Question & Answers	10
Race Challenge (30%)	The fastest robot will have the highest score	30
Total		100

9. CONFLICT RESOLUTION

- 9.1 During a gameplay, the referee’s decisions are final.
- 9.2 Rule clarifications may be made by the members of the RoboCup Singapore CoSpace Technical Committee.

10. CODE OF CONDUCT

10.1 Fair Play

- (a) Humans that cause a deliberate interference with real robots or damage to the real world setup will be disqualified.
- (b) It is expected that all teams are to participate fairly.

10.2 Behaviour

- (a) If one team copies a program from another team, both teams will be disqualified.
- (b) Participants should be mindful of others and their robots when moving around the tournament venue.
- (c) Participants who misbehave may be asked to leave the building and risk being disqualified from the tournament.
- (d) These rules will be enforced at the discretion of the referees, officials, tournament organizers and local law enforcement authorities.
- (e) The referees and officials will act alongside the spirit of the event.

10.3 Mentor

- (a) Mentors (teachers, parents, chaperones, translators, and other adult team members) are not allowed to be involved in programming of students' robots.
- (b) Mentor interference with robots or referee decisions will result in a warning in the first instance. If this reoccurs, the team will risk being disqualified.

It is not whether you win or lose, but how much you learn that counts!

Please contact Competition@CoSpaceRobot.org should you have any questions.