

**REPUBLIC OF TURKEY**  
**THE MINISTRY OF NATIONAL EDUCATION**  
The General Directorate of Technical and Vocational  
Education



**13. INTERNATIONAL**  
**MEB ROBOT CONTEST**  
**HUMANOID ROBOTS CATEGORY**  
**RULES**

**2019 - SAMSUN**

## THE CATEGORY RULES

### HUMANOID ROBOT

A humanoid robot is a robot with its body shape built to resemble the human body. In general, humanoid robots have a torso, a head, two arms, and two legs, though some forms of humanoid robots may model only part of the body, for example, from the waist up. Some humanoid robots also have heads designed to replicate human facial features such as eyes and mouths. Humanoid robots using in this category must have a torso, a head, two arms, and two legs.

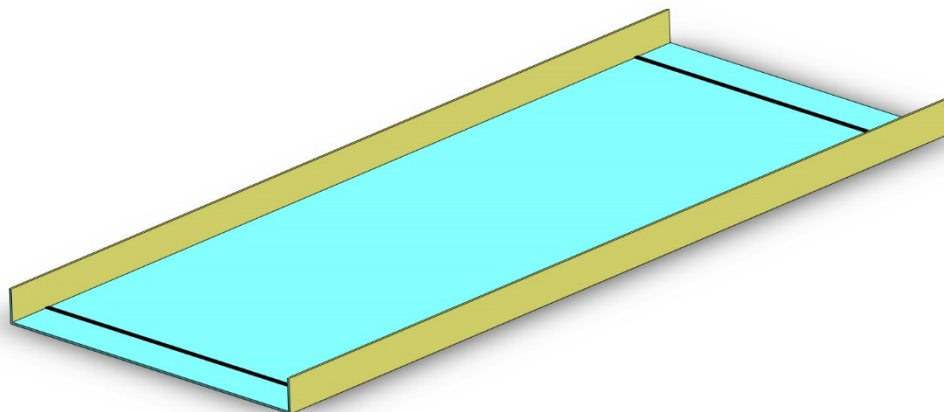
#### 1- Objective

It is to finish the path in minimum time by walking autonomously.

#### 2- ELIMINATION RACE

##### 2.1- Details of Elimination Track

- Walking path has 800 mm width and made by white opaque foil.
- Walking path is surrounded by walls which have minimum 80mm height.
- Distance between starting and finishing lines is 2000 mm.
- Starting and finishing lines have black color and minimum 20mm width.
- There are metric lines inner side of walls to measure the distances.



**Figure 1** : Walking Path

### 3- SPECIFICATIONS

- I.** Robot has bipedal structure which moves the center of gravity and walks to keep its body in balance while walking. It must not get support from another point to do this.
- II.** While walking or one of foot rising , the other foot must keep the robot in balance.
- III.** While walking, the knee angle of the leg which keeps the robot in balance must be bigger than 90 degree. If it is smaller than 90 degree, it means that the robot didn't walk.
- IV.** Feet of robots may be any shape as long as following conditions are met :
  - a. The robot foot is expressed as a piece of robot that touches the walking platform surface (on the ground).
  - b. Maximum foot length must be smaller than 50% of length of leg. Length of leg is expressed as a distance from waist to heel.
  - c. Foot length must be less than 20cm.
- V.** While the robot is standing or walking, the soles around the left and right feet will not overlap.
- VI.** When the arm of robot is fully extended , length of arm must not exceed the length at which the foot is fully opened.
- VII.** Robots must have a head.

### 4- Competition Rules

- a)** After starting signal, the time will be measured until robot reaches the finishing line. When foot of robot touches or passes the finishing line, it will be assumed that robot passes the finishing line .
- b)** Each robot has maximum 3 minutes. If robot cannot finish the walking path in this time, it is taken from path. To calculate it's score, the distance from starting line takes into consideration.
- c)** Time will be measured by judge using chronometer.
- d)** Robot must walk autonomously from starting line to finishing line. Otherwise it will be disqualified.
- e)** When robot falls, judge count down from ten to zero. If robot cannot stand up again, it is taken from path. To calculate it's score, the distance walking successfully from starting line takes into consideration.
- f)** Robot which finishes the path autonomously in shortest time becomes winner. If there is no robot can walk throughout the path successfully, the one walks longest distance in shortest time becomes winner.
- g)** Robots will be examined right before the competition.
- h)** If necessary, organisation committee can decide to change the rules

Line	Robot Name	Finishing time	Robot unable to finish	
			Distance	Time
1				
2				
3				
4				