

**\* General Rule:** Please check the general rule first before read this rule. General rule take precedence over any rules.

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<b>Mission Challenge</b>	League	Participation	Construction
	Junior/ Challenge	1~3 Person Robot	On Site

## 1. Game description

Mission Challenge is a category which makes a robot conduct a designated mission on the day of match. In a limited situation, participants are evaluated with the ability to solve problems by applying scientific knowledge and robot technology. **This game is played face-to-face only.**

## 2. Robot

**2-1. Robot type:** No restriction

**2-2. Built on-site** Except for the controller, all participants must make their own robot on the matchday, must comply with size limitation.

2-2-1. Size of robot

2-2-1-1. Size: It will be announce on the day of match

2-2-1-2. Size measurement

- 1) Self-Check: Participant can check size of the robot while manufacturing and practicing.
- 2) Official inspection: Before the competition, referee will check the size of the robot.
- 3) Ways of Measuring: Referee will check the size of the robot with the measuring materials. Participant cannot give any objection toward the judge.
- 4) Modify: If it exceeds the size, participant has a minute to modify their robot in front of the judge. participant will be given 1 minute to modify their robot in front of the judge, on a designated desk. If participant fails to fit the standard size, he or she will be disqualified.

2-2-2. Sensor of the Robot: Numbers of sensor will be limited according to mission given on the matchday, won't exceed the number in the table below.



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TYPE OF SENSOR	MAX NUM
IR sensors	8
Ultra-sound sensors	4
Touch sensors	2
Color sensors	2
Camera sensors	1

#### 2-2-3. Power

2-2-3-1. Robots should work with an independent electric power supply; it cannot use a combustible device.

2-2-3-2. There is no limitation on type of battery or voltage.

2-2-4. Operation: No restriction

2-2-5. Robot Motor: Sensor of the Robot: Numbers of sensor will be announced according to mission given on the matchday, won't exceed the number in the table below.

TYPE OF MOTEOR	MAX NUM
Continuous Revolution Motors	4
Servo Motors	6
Encoder Motors	2
Stepping Motors	2

**2-3. Except the starting point, robots must move autonomously by the program and it cannot be operated by any outer interference.**

### 3. Competition Site

**3-1. Official Playfield:** Size, arrangement and composition of playfield will be announced on the day of match.

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## **4. Competition progress**

### **4-1. Game process**

It is time recorded game and chance will be given twice. After first trial there will be repair time.

### **4-2. Construction and practice time**

Construction and practice time will be given at least 2hours and it will be announced on the matchday.

### **4-3. Allocation of playfield**

It will be allocated based on number of participant and difficulty level of the game.

### **4-4. Production and Practice time**

Participants can practice until the end of announced practice time; however, they're not allowed to practice before their seat's been assigned.

### **4-5. End of Production and Practice time**

After production and practice time, participants must stop their robot and follow the instruction of referee and staffs.

### **4-6. 1<sup>st</sup> Run**

After the construction and practice time the 1<sup>st</sup> run will begin.

#### **4-6-1. Preparation of the game**

All participants must take out the robot and be ready for referee's instruction.

#### **4-6-2. Stand by after the game.**

When participant finished their 1<sup>st</sup> trial, they have to line up and watch all participants' game until end of that trial.

### **4-7. Repair Time**

After the end of 1<sup>st</sup> run, all participants have 30 minutes to modify their robot and practice.



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#### **4-8. 2<sup>nd</sup> Run**

Right after the repair time, 2<sup>nd</sup> Run will begin.

##### **4-8-1. preparation of the game**

All participants have to take their robot out and be ready from referee and staff's instruction.

##### **4-8-2. Stand by after the game.**

If a participant finishes his/her 2<sup>nd</sup> trial, they will go back to their seats.

### **5. Competition**

#### **5-1. Performing of the mission**

Games where driving course and sequence of game is not designated, participants can decide their own driving course and game sequence freely.

#### **5-2. Points**

A participant scores points according to the number of successes. The points per each mission will be announced on the match day.

#### **5-3. Start** A participant should start the robot when the referee starts the game.

##### **5-3-1. Miss Start**

If participant couldn't start within 5 counts from referee's signal, it will be declared as 'Miss Start' and they have two more chance to restart for this miss start.

##### **5-3-2. False start**

If the participant starts the robot before the referee's signal, it is declared as 'False start' and they have only one more chance to restart.

##### **5-3-3. Restart**

The chances are only twice and if there is no move after the restart signal from the referee, it will be disqualified.

#### **5-4. Time limit**

It will be announced on the match day.

#### **5-5. Mission**

Size and platform of playfield will be announced on the day of match. Mission which

participant should conduct will be announced by referee or organizer on the day of

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5-5-1. Before starting the game, referee will describe the mission to a representative of each team. (Ex. Build a robot that can carry a 500g weight for over 1m wall, can dive and pick up the following treasure from the bottom of the water pool, can climb over a 1m tall wall.)

5-5-2. Referee will also give a description of the scoring formula used for this event. (Ex. The robot must carry three metal balls across the water as quickly as possible. If a robot loses a ball, then a 60 second penalty will be added to the time.)

5-5-3. Standard of scoring system is based on quantitative standard: timekeeping, distance record and the number of moving targets, in some special occasion it might include a knock-out competition or even a subjective evaluation.

5-5-4. the referee will also announce any special restrictions or rules that may be in effect during the event.

(Ex. Participants must use more than three rubber bands.)

5-5-5. Participants can use general material that is not related to robot

(Ex) Paper, chopstick, paper cup, paper dish, wooden stick, Styrofoam and coating paper, plastic cup, plastic dish, clip, pen, a rubber band, tape, cable tie, hairclip, needle, Strap and Rope etc.

5-5-6. Special tools and items that might cause safety and security problems may be restricted to use in site.

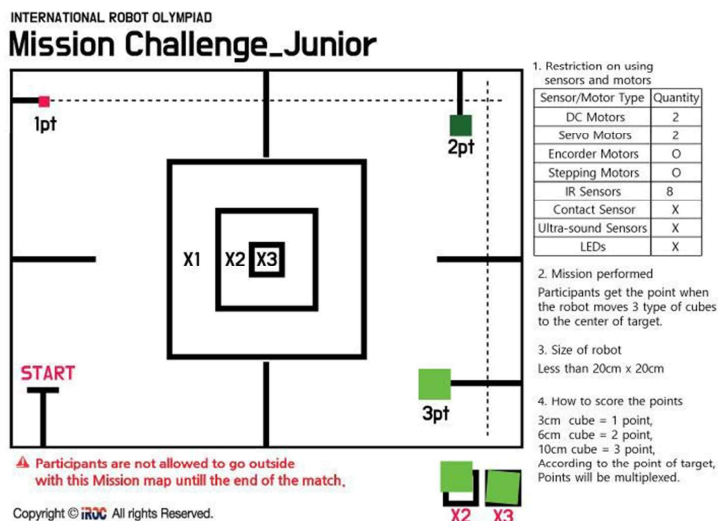




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Ex)



## 5-6. End of Competition

5-6-1. Mission completed: If participant complete the mission within time limit, match will be finished and count the points.

5-6-2. Time limit

If robot couldn't complete the missions within 2 minutes, points earned within 2 minutes will be aggregated as final score.

5-6-3. Robot Stop

If the robot doesn't move, the referee will count 10 seconds and if the robot still could not move, will call it a stop and count the points participants earned until the robot stopped

5-6-4. TKO (technical knockout): During the match, referee can declare of TKO without 10 counts when referee judge that the robot can't drive properly anymore. (Ex. robot had been stopped over the structure and obstacle, robot drive settled zone repeatedly)

## 5-7. Disqualification

During the match, if participant violates the rule or interrupts the match, will be ended and result will not be admitted.

5-7-1. Robot Touch

During the match, if participants touch the robot without judge and supervisor authorization, it will be declared robot touch and disqualified.

5-7-2. Repair during the match

During the match, additional, remove, exchange, changing the toll is prohibited but during the standby, if the participants has additional battery then the team will be

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#### 5-7-3. Sensor tuning

Before the match begins, if participants try to tune the sensor, will be disqualified

#### 5-7-4. Disobey of seat allocation

If participant practice or play the game at the playfield that they're not assigned, participant will be disqualified.

#### 5-7-5. False Start

If participant conduct 'False Start' twice, participants will be disqualified.

#### 5-7-6. Miss Start

If participant conduct 'Miss Start' three times, participants will be disqualified.

### 5-8. Rematches

During the match if expected situation occurs, such as blackout or breakdown of measuring instrument, referee can decide to do rematch.

**5-9. Referee will control all situations from and referee have authority to control participants. The judgment of game result is exclusive authorization of referee. The declaration shall be final.**

## 6. Evaluation

### 6-1. Ranking decision factors

Mission points, time record and so on.

### 6-2. Time record

Time record is based on the measuring instruments or referee's timer. (If you are declared as TKO, Robot stop, Robot falls by referee, time record will not be accepted as final score.)

### 6-3. Final score

Better score out of 1st and 2nd run will be the final score.

### 6-4. Order of priority to result

**Ex) Scores > Time record > Compare the time result**

#### 6-4-1. Order of priority according to rounds

If result is same, winner will be decided after comparing the result of another rounds.

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6-4-2. Order of priority according to Tie-Breaker

Better score out of 1<sup>st</sup> and 2<sup>nd</sup> round will be accepted as final point, but if tied, player with better result in 1<sup>st</sup> round will win the game.



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