



THE ROBOTICS CLUB  
Integrating Knowledge...

# SAMANVAYI



SREENIDHI'S ANNUAL TECHNICAL FEST

# ROBOVEDA'25

EXPLORE THE UNWRITTEN LORE...



# R U L E B O O K

## SAMANVAYI

### 1. GAME AND RULES:

Samanvayi is the perfect test of your robot's agility and your mastery to control your robot. This brings a perfect chance to show your foxiness and blend your wizard and fighter instinct controlling skills.

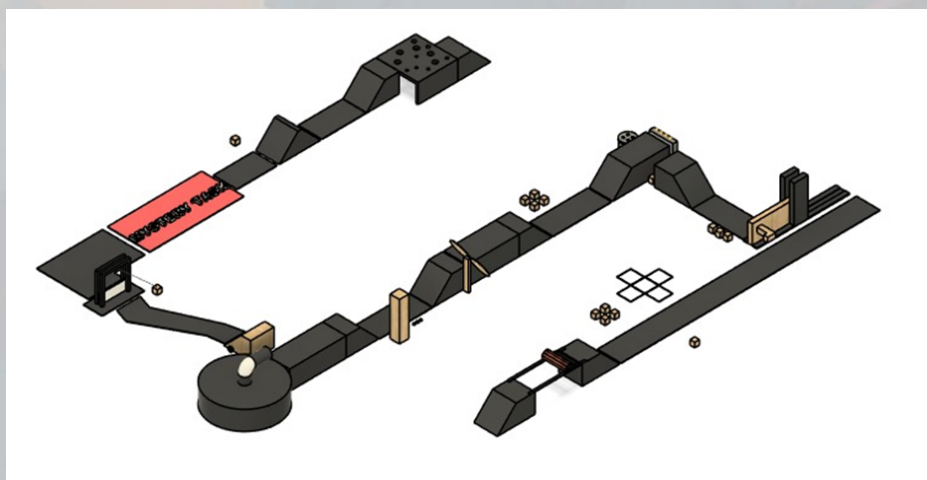
So, gather up all your patience, persistence, and integrity of your team before entering the spectacular arena. Come prove your worth at Roboveda 25, display your endowment and expertise to control the Robotic arm and get victory over your opponent.

#### 1.1 PROBLEM STATEMENT

1.1.1. Design a manually controlled pick-and-place robot to navigate a challenging arena filled with obstacles. The robot must accurately pick and place objects while avoiding penalties, completing the task in the shortest time possible, despite hurdles that impact its speed and precision.

### 2. GAME FIELD AND OBJECTS:

#### 2.1. ARENA





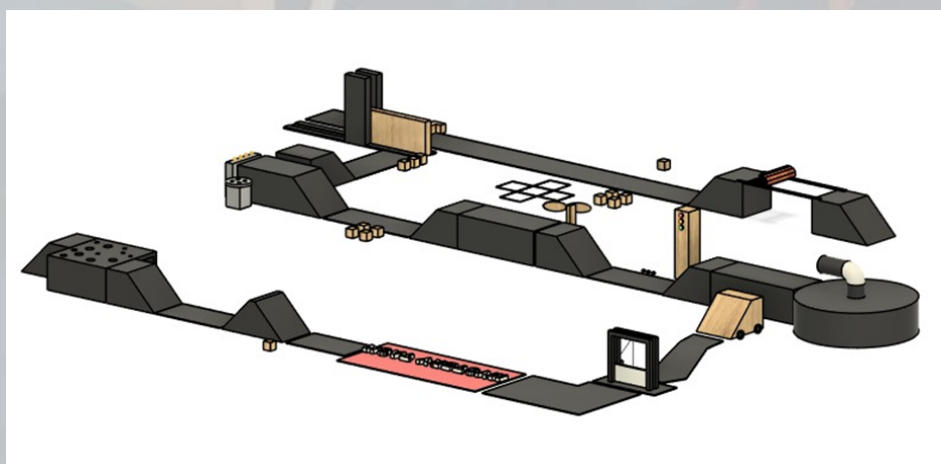
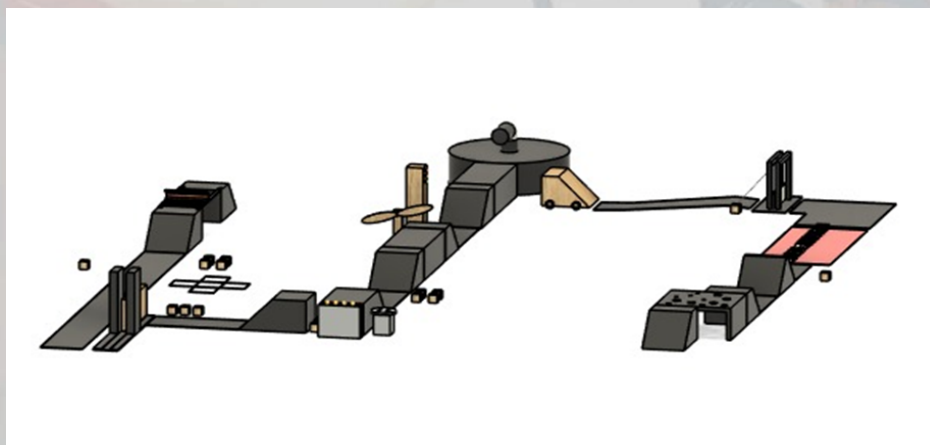
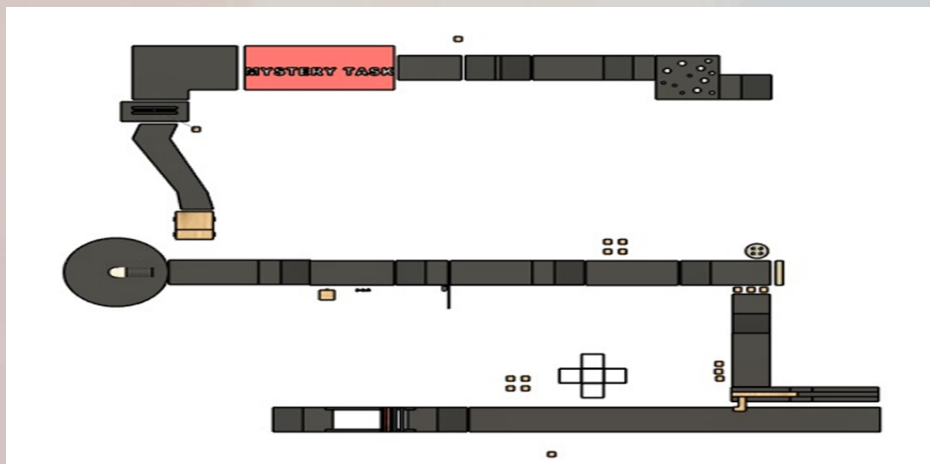
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[www.roboveda.org](http://www.roboveda.org)



Sreenidhi Institute of Science and Technology, Yamnampet

### 3. TEAMS:

- 3.1. There is no team limit.
- 3.2. Only 2 members of a team are allowed to stay around the arena (one for controlling and one for assisting) and a team is allowed to play with one robot only.
- 3.3. Members of different institutions can form a team.
- 3.4. Students who are pursuing any course upto post graduation can participate.

### 4. ROBOTS:

#### 4.1. ROBOT SPECIFICATIONS

- 4.1.1. Robots can be wired or wireless; if wired, the cable length must be a minimum of 3 meters.
- 4.1.2. If batteries are on the robot, then they will be considered for weight.
- 4.1.3. If batteries are not on the robot, then they will not be considered for weight.
- 4.1.4. The use of pneumatics and hydraulics is permitted. The maximum allowable pneumatic pressure is 7 bars (pressure source not provided).
- 4.1.5. A robot is allowed to participate only once in the event. The robot can participate once again with the same team if it satisfies the following conditions:
  - The team has to register once again with a modified old robot/new robot before registrations close and a maximum of 3 registrations will be accepted.
  - Wheels or motors or chassis materials should be changed to consider an old robot as a new one.
- 4.1.6. Robots should not damage any part of the arena. If the robot damages any part of the arena, it will be disqualified.
- 4.1.7. The robot should not expand or compress during the run. A technical timeout can be taken in case of any part detachment of the robot.
- 4.1.8. Use of IC engines is not allowed.
- 4.1.9. Lego kits and ready-made robots are not allowed.

#### 4.2. ROBOT DIMENSIONS

- 4.2.1. Dimensions of the robot should not exceed **30cm x 30cm x 60cm** (including arm) (l\*b\*h). (Tolerance of 5% is allowed in this regard).



## 4.3. POWER SUPPLY FOR ROBOTS

4.3.1. The potential difference between any two points should not exceed a limit of 12V and 7.2A, the robot should be powered only using batteries. (A tolerance of 5% is allowed).

4.3.2. If the robot suddenly stops in the arena due to any technical problem, you will be allowed to take a technical timeout. After taking one technical timeout, the timer will not be stopped if the robot suddenly stops in the arena due to any technical problem.

4.3.3. The power supply may be ON or OFF the board (i.e., one of the team members can hold the power supply).

4.3.4. Changing the battery or battery polarity is not allowed during the race.

4.3.5. No external power supply will be provided at the time of the event.

## 4.4. WEIGHT

4.4.1. The maximum weight of the robot should not exceed 5kgs.

## 5. SAFETY:

5.1. All the required accessories should be brought by the participants.

5.2. Team RoboVeda is not responsible for any damage to the robot.

5.3. Technical assistance will not be provided by coordinators or technical team.

## 6. THE COMPETITION AND MATCHES: There are two rounds

### I. Qualifying Round

### II. Final Round

## 6.1. QUALIFYING ROUND

6.1.1. During the qualifying round, one team will be allowed to participate at a time.

6.1.2. During a time-out, participants are not permitted to leave the game room to retrieve tools or materials.

6.1.3. Initially, the team must position their robot at the starting position.

6.1.4. The robot must pick up and place the block at the starting point before commencing the tasks.



6.1.5. The robot must navigate through any obstacles or bridges present in the arena while performing tasks, if applicable.

6.1.6. No tasks should be skipped.

6.1.7. This qualifying round consists of 3 checkpoints including mystery tasks.

**Note:** Participants may encounter mystery tasks that must be completed.

## 6.2. CHECKPOINT-1

6.2.1. Participants must finish the following in order to complete this Checkpoint:

- In this checkpoint, the participant rolls a dice, and the robot picks and places a block after the number of boxes obtained on dice until the task is completed.
- There is a rolling bridge that unwinds when a block is placed in a specific location, allowing the robot to cross the bridge.
- A plus symbol is marked on the ground with tape, and the robot must pick and place blocks on it in the given order.
- The robot's arm must catch/hold the handle of gate and slide the gate out of the boundary, allowing the robot to pass through it.

## 6.3. CHECKPOINT-2

6.3.1. Participants must finish the following in order to complete this Checkpoint:

- The robot must form a bridge by dropping blocks between the two bridge sections.
- This checkpoint consists of the robot picking up objects (blocks/balls) and dropping them into their respective slots on a rotating disk.
- The robot must place a block in a specific location to halt the rotating obstacle and pass through it.
- The robot must place a block in a specific switch to activate a green light and proceed. If the green light does not turn on, it must go back, pick another block, and place it on other switch.
- The robot must pick up a block and make one complete circular rotation along the designated path to form a bridge.

## 6.4. CHECKPOINT-3

6.4.1. Participants must finish the following in order to complete this Checkpoint:

- This checkpoint consists of a vertical gate that will lift when a block is placed in a designated spot, allowing the robot to travel through it.
- The robot must pick up a block and move across the ramped bridge.
- The robot must pick up a block, cross the holes bridge, and place it in a specific location.

## 6.5. FINAL ROUND

6.5.1. Details about the Final round will be disclosed on the same day it is conducted.

6.5.2. The specifications for the robot in the final round are identical to those of the qualifying round.

6.5.3. The team which cracks the arena in the least amount of time (with penalties) will be pronounced as the winner of the final round.

6.5.4. The robot participating in the final round should be the same one that participated in the qualifying round. Modifications will be allowed for the robot (only if previously used parts are damaged) in between the rounds only if the following conditions are satisfied :

- The participant must show both the damaged part of the robot (wheels, chassis, motors) and the replaced part of the robot (wheels, chassis, motors) on the day of the final round.
- Heads or coordinators of the event will allow the modified robot only if the damaged part and replacement part are the same/similar.

## 7. COMPETITION RULES:

### 7.1. TECHNICAL TIMEOUTS

7.1.1.A technical timeout of 90 seconds can be taken by a team.

7.1.2. After the finishing of technical timeout, the timer will start again and will not be stopped under any circumstances.

7.1.3. No technical assistance will be provided by the event coordinators or heads during the event.



## 7.2. SCORING & PENALTIES

- 7.2.1. Proper Placement or insertion of the blocks/balls by the robot: **-15 sec** for each block.
- 7.2.2. Clearing each checkpoint: **-30 sec**
- 7.2.3. Placing the block in an inappropriate position: **+8 sec**
- 7.2.4. Slipping off the bridge: **+20 sec**
- 7.2.5. If the robot's two tyres cross the arena boundary more than 3 times: **+8 sec**
- 7.2.6. If the robot gets stuck at any point in the arena, the participant may choose to start from the nearest checkpoint: **+12 sec**
- 7.2.7. Participants touching the robot: **+10 sec**
- 7.2.8. Changing components or batteries of the robot during the game after a time-out: **+20 sec**
- 7.2.9. Dropping a block/ball other than stacking blocks, rotating disk & bridge formation: **+6 sec**
- 7.2.10. Dropping a block more than five times during stacking blocks, rotating disk & bridge formation: **+8 sec**
- 7.2.11. Dragging a block without lifting it completely(except at the vertical gate-checkpoint 2): **+8 sec**
- 7.2.12. In the rotating disk/pipe tasks, if ball/block are dropped incorrectly more than twice: **+8 sec**
- 7.2.13. Holding any object other than a block, such as a pipe, while taking a turn on the disc: **+8 sec**
- 7.2.14. If a robot gets stuck on the bridge, it must start again from the bridge starting position and with a penalty of: **+30 sec**

## 7.3. BASIC RULES

- 7.3.1. The Participants will be evaluated based on the speed and accuracy of tasks performed.
- 7.3.2. The team is supposed to build a pick and place robot capable of handling blocks measuring 7cm x 7cm x 7cm, with weight of 270 gms (5% tolerance).
- 7.3.3. The robot must successfully complete the assigned tasks within the specific time limit.
- 7.3.4. The team should complete the given tasks in a total time of 15 minutes.



7.3.5. Teams should exercise careful and strategic control over their robot to achieve the fastest completion time and secure victory to advance to the final round.

7.3.6. Among the first-round winners, the top two teams with the least time will qualify to the final round.

7.3.7. If two or more teams are tied for second place, a tiebreaker will be conducted to determine the qualifying team.

7.3.8. The winner of the tiebreaker will earn a spot in the final round.

## 8. DISQUALIFICATION:

8.1. If a participant does not comply with the rules of the event, the robot will be disqualified from the event.

8.2. Robots should not damage any part of the arena. If the robot damages any part of the arena, it will be disqualified.

8.3. Misbehavior of any kind will not be tolerated and the team will be subjected to disqualification from Roboveda.

8.4. If the robot slips or falls more than 3 times, it will lead to direct disqualification.

8.5. If the robot's two tyres cross the arena boundary more than 5 times, it will lead to direct disqualification.

## 9. COMPETITORS AND BEHAVIORAL RULES:

9.1. All participants will be given a Certificate of Participation.

9.2. Winners and runners will be given a Certificate of Merit.

9.3. All participants must bring both a college ID card and an event ID card.

9.4. Participants are allowed to participate once again if they satisfy rule 4.1.5.

9.5. Participants are not allowed to use their own Stop watches.

9.6. Team Roboveda is not responsible for any kind of damage to your robot.

9.7. We request the participants not to assume anything that is not mentioned in the document without contacting the Coordinators or Technical Team.

9.8. It's our sincere request to all the participants to go through this rule book thoroughly and not a single point mentioned in the rule book will be compromised under any circumstances. We also request you have a copy of this rule book handy during the event.

9.9. In case of any discrepancies, the decision of co-ordinators and heads shall be final and no further argument will be entertained.



9.10. Make sure you visit our official website on a daily basis so that you will get to know if there are any changes made in the event.

9.11. Any kind of misbehavior will not be tolerated and will lead to disqualification of the team.

9.12. If you choose our hospitality, the payment must be made on the day you check-in.

9.13. In unforeseen circumstances, Team RoboVeda abides by the decision of the Institution regarding the conductance of the event. Only registered participants will be informed about the change in event dates or cancellations. In that case, the registration fee will be refunded.

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