TAMILNADU ROBOTICS LEAGUE

SOUTH INDIA'S BIGGEST ROBOTICS COMPETITION

SEASON - 2

Propeller Technologies

AI | ROBOTICS | DRONES | 3D PRINT

STEM.ORG REVIEWED #46788206 | STEM.ORG ACCREDITED #39786611 | STEM.ORG CERTIFIED #46766422

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EVENTS AND REGISTRATION

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Events

1. **Robotics Junior**: To solve the arena based on the problem statement
2. **Robotics Senior**: To solve the arena based on the problem statement
3. **Makeathon**: To design the solution for any social problem

Registration

- **The registration fee per student per event is Rs. 499/-**
- **You can contact the below mentioned mobile number to initiate the registration process 7540040071 / 79**
- **Event venue - National College, Trichy**
- **Date - October - 14 - 2023**

PRIZES

Robotics Junior

- Winner
- First Runner up
- Second Runner Up
- Best Robot Design
- Best Robotics Controller
- Best Team

Robotics Senior

- Winner
- First Runner up
- Second Runner Up
- Best Robot Design
- Best Robotics Controller
- Best Team

Makeathon

- Winner - **Cash Prize**
- First Runner Up
- Second Runner Up
- Best Novel Idea

Special Prizes:

- Overall Championship
- Empowering Excellence: School that motivates maximum students to participate in competitions to get exposure

TAMILNADU ROBOTICS LEAGUE - 2K23

South India's Biggest Robotics Competition

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Senior Level Problem Statement

Theme

The theme for the Tamil Nadu Robotics League 2023 is "Simple Machines." The entire arena will consist of tasks based on simple machines such as the Wheel and Axle, Levers, Wedge, and Pulley systems that we have studied in our curriculum.

Who can Participate?

Grade 8, 9, 10 and 11

Team Members

A team can have a minimum of 3 and maximum of 4 members who will be playing following roles

- 1st Member - Robot Controller (who will be operating the Bot)
- 2nd Member - Operator (who will be in the assembly line build a circuit and make the simple machine move)
- 3rd and 4th Member - Task Force (These individuals are responsible for calculating certain values using simple equations and assisting the runner in choosing the appropriate block, enabling the robot to complete the task successfully).

Robot Specification:

The senior team will be building a wired or wireless robot with the following specifications, and they have the flexibility to choose any wireless technology, such as RF, Bluetooth, ZigBee, or Wi-Fi.

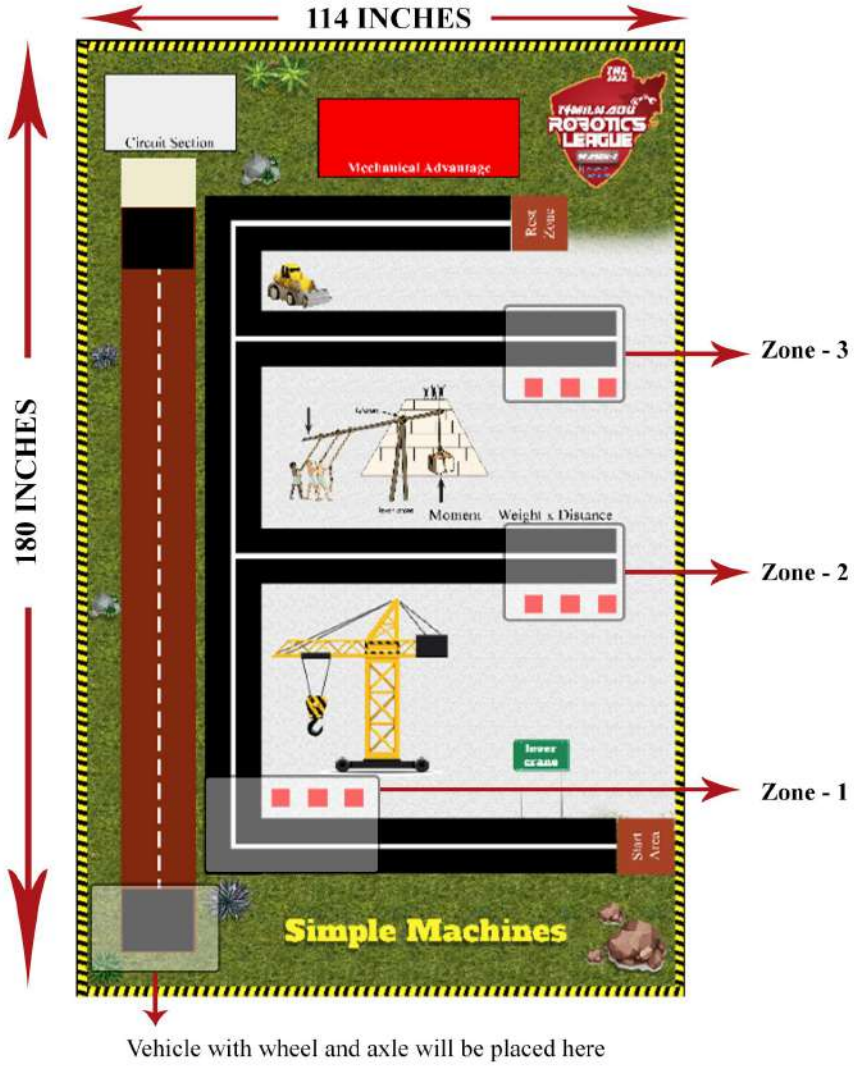
Length	Breadth	Height
10 Inch (Maximum)	10 Inch (Maximum)	No Limit

Senior Level Problem Statement

Reference Design for the Robot:

It is mandatory that the robot designed should have a robot arm mechanism which can lift and drop blocks of maximum 500gram weight. The robot arm mechanism can either have a gripper or a hook which depends on the convinence of the students.

Arena Information



Vehicle with wheel and axle will be placed here

Senior Level Problem Statement

Actual Task Description

1. The race will begin in the start area mentioned in the arena

2. Once the race has started, the Robot Controller will operate the bot, while at the same time, the Operator has to connect a simple circuit consisting of a motor, battery, and switch to operate a vehicle made out of a wheel and axle. Meanwhile, the team members in the Task Force will make some simple calculations on how to balance the tower crane by adding the counterweight for the load kept in the tower crane and be ready with their answers.

3. The arena has three zones, and in each zone, weight blocks of various weights will be kept.

4. When the Robot Controller reaches zone 1, the team members in the Task Force should update which particular weight block has to be taken. Then, the Robot Controller has to lift the block with the help of the robot arm mounted on the robot and place it in the vehicle. The Robot Controller will then move to zone 2. Meanwhile, the Operator has to move the vehicle to zone 2 using the circuit they built.

5. After reaching zone 2, the Task Force will instruct the Robot Controller on which weight block has to be taken. The Robot Controller will then take the block, place it on the vehicle, and move to zone 3. The same process will be repeated in zone 3 as well.

In some cases, there may be a chance that only two weight blocks need to be taken instead of three. In such situations, after taking the two blocks, the Robot Controller can proceed to the rest zone.

It's important to communicate clearly between the Task Force, Robot Controller, and Operator to ensure the correct number of weight blocks are taken and placed in the vehicle according to the instructions provided.

6. Once all the weight blocks are taken, the Operator can move the vehicle and keep the weight blocks in the Mechanical Advantage Zone. However, the Task Force should not take the weight blocks and place them in the tower crane to balance the load until the robot reaches the rest zone.

Note:

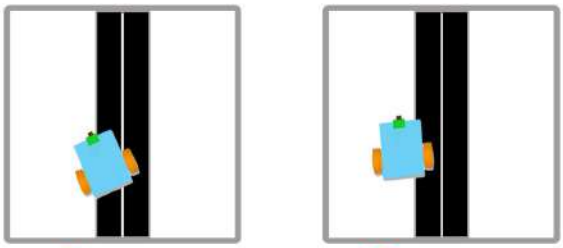
The exact demo video of how to solve the arena using the robot will be released to all registered participants 15 days before the event. Meanwhile, students can construct the robot and practice navigating them

General Rules:

- The duration of the run will be 6 minutes and there won't be any trial time provided for the run on the event day.
- The robot should be as per the given specifications.
- A score will be given only if the props are placed completely inside the specific area, not partially.
- Students from different grades can also form a team.
- Each member of the team must come from the same institution.
- You can use any materials to build your robot.

Senior Level Problem Statement

- A power source of a maximum of 12 Volts and 7000 mAh current is allowed in the robots
- Participants can touch the robots only when they are in their starting areas and nowhere else. Overruling this can lead to disqualification.
- The robot body should remain within the track path while moving, although a part of the robot body is allowed to come outside. If more than half of the robot body has come out of the track, it is considered a deviation



✓ Accepted ✗ Deviation

- Participants can repair their robots at the start area in case of any issues. However, it is important to note that the run timer will continue running and will not be paused during the repair process..
- During the arena run, if by any means the arena or props get damaged, the referee has the authority to disqualify the team
- It is mandatory to give a name to your robot and visibly paste it on the top of the robot. This helps in identifying and distinguishing each robot during the competition or event.
- The judge's decision will be considered final.

Evaluation Criteria

Criteria	Points
Connecting the circuit of a vehicle and make it movable	20
Placing the 1st block in the vehicle	10
Placing the 2nd block in the vehicle	10
Placing the 3rd block in the vehicle	10
Robot staying in Rest Zone	10
Balancing The Tower Crane with proper weights	20
Answering the question related to simple machine	20
Total	**100 Marks**

WHAT IS TAMIL NADU ROBOTICS LEAGUE

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The **Tamil Nadu Robotics League** (TRL) is South India's Biggest Robotics Competition that aims to celebrate Science, Technology, Engineering and Mathematics (STEM) and make innovation an area of passion for the young minds of the developing world. It intends to capture the attention of young innovators by giving them problems and challenges that not only stretch their imagination but also creates soulutions to burning issues.

With our inveterate vision of **"Together we create makers of the world" Propeller Technologies R&D Pvt Ltd** is missioned to intersperse a myriad of makers across the world by imparting real-world connectivity in Tech education and providing the best **STEM** education imaginable along with STEM kits, Robotics competitions and several other learning resources.

100+ SCHOOLS

250+ ROBOTS

3000+ STUDENTS

THEME FOR TRL - SEASON II

"SIMPLE MACHINES"

We invite students to build bots and navigate through an arena designed using the concepts of simple machines that they have learned in their primary classes. This will help students gain a better understanding of the applications of simple machines in real life and solidify their STEM foundation

GLIMPSE OF TRL -2K22