



PLAZA

RULE BOOK



About Us:

STARKS is a non-profit robotics team founded by students in July 2017. Our mission is to participate in and organize robotics competitions, providing students with hands-on experience to bridge the gap between theory and practice. Through sessions, workshops, and competitions, we aim to introduce students to the exciting world of robotics.

Our Goals:

At STARKS, we use robotics to inspire students and ignite their passion for science, technology, engineering, and STEM fields. Our goal is to help them apply theoretical knowledge to real-world projects, enhancing their problem-solving and technical skills.

Overview:

The PLAZA Competition focuses on what students learn through practical applications in mechanics, design, programming, electronics, and engineering. Participants will develop problem-solving skills as they design and program their robots during our sessions and workshops. The competition consists of three challenges: **Line Follower, Transporter, and Sumo.**



Contest Objective:


Teams must design a robot capable of transporting various loads while racing against another robot, each following a designated path. The robots are tasked with carrying a specified weight and delivering it to an assigned location while completing additional challenges. At the final stage, both robots converge, and the one that successfully completes all tasks in the shortest time wins the race.


Team Specifications:


- Each team must consist of **5 to 8 members**.
- **A team leader** must be designated as the main point of contact with technical support.
- **Participation is free** (0 L.E. per team).
- While there is no strict team structure, we highly recommend assigning specific roles to team members for efficiency, such as:
 1. **Mechanical Designer** – Responsible for the structural and mechanical aspects of the robot.
 2. **Software Developer** – Handles programming, control systems, and automation.
 3. **Hardware Designer** – Manages electronics, circuitry, and hardware integration




Robot Specifications:

-  **Dimensions:**
 - **Base:** Maximum **30 × 40 cm**.
 - **Height:** Maximum **40 cm**.
 - **Arm & Grip Length:** Maximum **50 cm** (not counted in base dimensions).
 - **Weight:** Maximum **6 kg**.

-  **Control:**
 - The robot **must be manually controlled** (wired or wireless).
 - **Automatic control** is **only allowed** in designated stages.

-  **Power Source:**
 - Maximum **24V DC** power supply.
 - **AC power sources** are **NOT allowed**.
 - Teams **must bring fully charged batteries**.

-  **Electronics & PCB Rules:**
 - **Pre-made PCBs** are **forbidden** (except Arduino boards).
 - **Custom circuits** must be **handmade**.



Field Rules:

- Each match consists of **three stages**, with each stage depending on the completion of the previous one.
- The **winning team** is determined by the **highest accumulated points** across all three stages.
- **Stages must be completed in order**; skipping a stage to move to the next is strictly prohibited.
- Before finishing the race, **all loads must be transported to their designated spots** (Load A is optional).
- The maximum total score for each match is **100 points**.



Stage 1: Speed Race (30 Points)

1. Line Follower Track (10 Points)

- The race begins with a small line follower track that must be completed within 2 minutes.
- Successfully passing this stage earns 10 points.
- If a team fails to complete the track, they must wait for the full 2 minutes before proceeding to the next stage.

2. Steep Slope Challenge (5 Points)

- After a short distance, the robot encounters a steep slope.
- Successfully passing the slope earns 5 points.

3. Load B Transport & Blocking (10 Points)

- The faster robot must carry Load B and place it on the opposite side of the track, effectively blocking the opponent's path.
- The first team to achieve this earns 10 points.
- If both robots transport Load B one after the other, they must then remove the blocking load and place it in the designated empty area next to their track. However, only the faster robot still earns 10 points, and no additional points are awarded for clearing the extra load.



4. Display Attempt Number (5 Points)

- After carrying Load B, the robot must display the number "1" on an LCD or 7-Segment Display before placing the load in its designated spot.
- Successfully displaying the attempt number earns an additional 5 points.

Stage 2: Fight Race (60 Points)

After completing Stage 1, the robot has two options to proceed:

1. Clear the Path:

- Remove all Load B obstacles blocking the way and proceed directly to Load C.

2. Alternative Route:

- Avoid the obstacles and follow another line follower track leading to Load C.
- At a spike, the robot faces another decision:
 - Continue the line follower track to reach Load C.
 - Take a sub-route to pick up Load A, place it in its designated spot, display "2" on the screen, then return to the line follower track (+10 points).



Challenges and Scoring:

- **Island Challenge:**

- The island contains three designated spots for placing Loads C and D.
- The first robot to place its loads earns 10 points.
- Fighting between robots is allowed only on the island to compete for these spots or to reach Load D first.

- **Load C Handling:**

- Successfully carrying Load C and ascending without dropping it on the first attempt earns 5 points.
- Placing Load C in one of the three spots earns 10 points.
- Displaying "2" or "3" (depending on whether the robot carried Load A earlier) earns 5 points.

- **Load D Handling:**

- Load D is located on the opponent's side of the island and must not be picked up before Load C.
- Reaching Load D before the opponent and picking it up first earns 5 points.
- Placing Load D in one of the three spots earns 10 points.
- Displaying "3" or "4" (depending on whether Load A was carried earlier) earns 5 points.



-

Stage 3: Finishing Race (10 Points)

1. Island Descent & Side Switch

- After completing Stage 2, the robot must descend from the island at the opponent's side, where Load D was placed.
- At this point, the robots switch sides with their opponents.

2. Inclined Scale Challenge

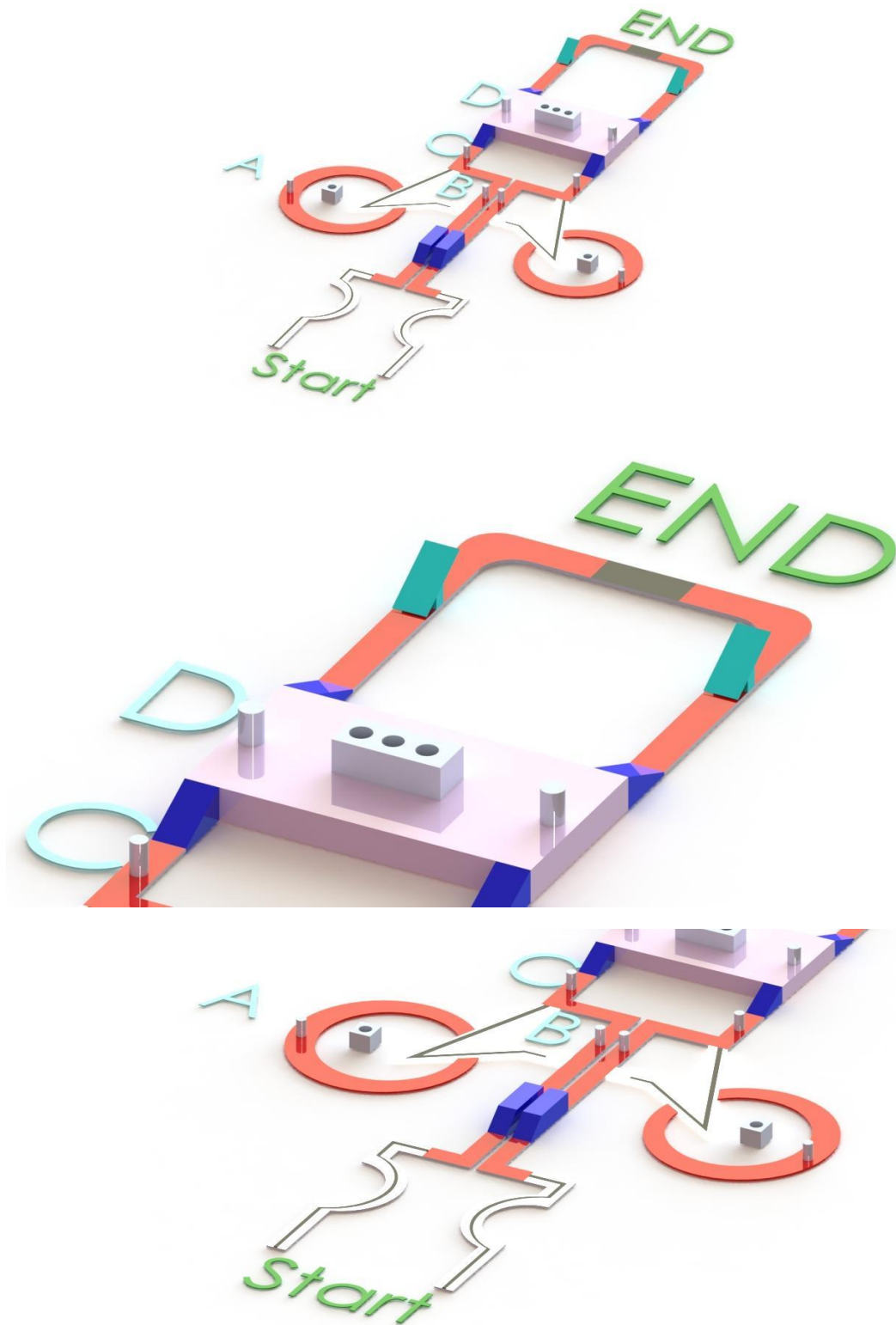
- The robot must cross an inclined scale and descend back onto the track.

3. Race Completion & Buzzer Activation (10 Points)

- The robot must proceed to the finish line.
- Upon crossing the finish line, it must activate its buzzer, signaling the race's completion.
- Successfully finishing this stage earns 10 points.



Arena Diagram:



Violations & Penalties

1. Track Deviations (-5 Points per Violation)

- Each time a robot deviates from the track, 5 points will be deducted.

2. Touching the Robot (-5 Points per Violation)

- Any physical interaction with the robot by the team results in a 5-point deduction each time.

3. Dropping a Load (-5 Points & Reset to Stage Start)

- Dropping any load results in a 5-point deduction.
- The robot will be returned to the beginning of the current stage.
- If a load is dropped 3 times, its points are lost, and the robot moves on to the next load.

4. Incorrect Load Placement (-5 Points)

- Placing a load outside its designated spot results in a 5-point deduction.

5. Turning Off the Robot (Penalties Apply)

- First shutdown: The robot must restart from the beginning of the current stage.
- Second shutdown: The robot restarts from the stage's beginning, with an additional 10-point deduction.



6. Repair Stoppage Rules

- Stoppage time for repairs is included in the total match time.
- Only 2 stoppages are allowed per match.
- On the third stoppage, the team is disqualified from the match.

7. Controller Substitution (-2 Points Once Per Match)

- The robot operator can only be changed once during a match, costing 2 points.
- There is no limit or penalty for switching between different matches.

8. Additional Rulebook Information (Important Note)

- Comprehensive details, including track layout, dimensions, and surface materials, will be provided in Chapter Two of the rules.
- The second chapter of the rules will be sent only to contestants.



Prizes & Awards:

-  First Place: 10,000 LE
-  Second Place: 5,000 LE
-  Third Place: 3,000 LE
-  Best Design Award: 2,000 LE



Contact Us:

Email: starksmu@gmail.com

Facebook: [Starks MU](#)

Instagram: [starks.mu](#)

LinkedIn: [STARKS MU](#)

WhatsApp: [Starks MU](#)

#Follow_Your_Dream ✨

#Starks_MU 🤖

#PLAZA 🚀

