Hungry Hungry Robots

Official Rules and Guidelines

1. Competition Objective

The objective of this competition is to simulate a robotic version of "Hungry Hungry Hippos." Each team will build and program a robot to autonomously collect colored pucks from a central play area and deliver them into their assigned goal zone. The winner will be determined by the cumulative scoring across multiple rounds of play.

- At the start of each match, teams are randomly assigned one of four colors: Red, Blue, Green, or Yellow. Each team will have at least one round per color.
- The 4' × 4' square playing field contains a random assortment of 24 colored pucks (six of each color). The pucks will be distributed by the judges after the robots have been placed on their respective color goal zones.
- Each side of the square features a 6" × 3'6" goal zone, painted in one of the four team colors. See the figure below.
- Robots must start completely within their corresponding color start zones.
    - Each robot will be assigned a corner of the board based on its given color. See the figure below for the 1' x 1' start zones.
- Robots attempt to collect and return as many pucks of their assigned color as possible to their own goal zone while avoiding collecting pucks of other colors.
- The moving of colored pucks other than the assigned color is permitted.

Scoring:

- Scoring for each round is as follows.
    - +2 points for each puck of your team's color in your goal zone at the end of the match.
    - –1 point for each puck of a different color in your goal zone.
    - +5 bonus points for a perfect game (you have all the pucks of your color and none of the others).
    - The maximum score is 17 points and the minimum score in any round is –18.
        - If a robot is disqualified for a rule violation, the score will be a –20 for that round.

- Scoring for the tournament is as follows.
    - Each team will complete one round on each color. The score of each round will be added to the team's total.
    - Updated tournament rules will be sent out once the final team count is known. If there are too many teams, the tournament will end after each team has had four rounds. If there is time, a playoff bracket determined by the first four rounds, will be completed to determine the winners.

2. Robot Constraints

- Autonomy
    - Robots must operate autonomously with no wireless or remote control during the match. This also restricts robots from being physically tethered to a laptop or other computational device not carried by the robot.
- Activation
    - Each robot must have a physical "go button" that starts operation after a **3-second delay.**
- Size
    - Robots must fit entirely within a 6” × 3’6” goal zone at the start of the match.
    - After the start of the match, there are no restrictions on the robot's size or dimensions.
- Power
    - Robots must be battery-powered. No tethered power sources allowed.
    - You will run at least four rounds within a two-hour window. Please be sure to have batteries and charging banks as appropriate for your robot. A round will not be delayed while your robot charges.
- Judges have final say
    - If the judges believe your robot breaks the spirit of the rules you can be disqualified from each round until the robot conforms to the rules.
    - While you plan and design your robot, you are welcome to reach out to Dr. Fine (see the contact section later in this document) with questions if you think your robot may violate the rules.

3. Game Field / Setup

- The main play area is a 4’ × 4’ square field made from ¾" x 4’ x 4’ MDF Handi-Panel bought at Menards. The color of the field is white. The 4’ x 4’ has a 1” black painted boarder around the perimeter.
- Each side of the square contains a 6” × 3’6” goal zone painted in a distinct team color. There is also a 1” border of black paint around the goal zone. The boarders are painted on top of the goal zone (See the figure below).
- Colored pucks are randomly distributed in the center area of the field prior to each match by the judges.
- The color pucks are made from poplar dowels 2" diameter and 0.5" thick.
    - The sides will be lightly sanded just to dull the sharp edges made from the cut.
    - The pucks will be painted (not primed) with the same paint used for the goal zoned.
- The paint used for white, black, red, green, blue, and yellow are as follows.
    - White - Apple Barrel 21119E Acrylic Craft Paint, Matte Finish, White
    - Black - Apple Barrel Acrylic Craft Paint, Matte Finish, Black
    - Red - Apple Barrel 21123E Acrylic Craft Paint, Matte Finish, Bright Red
    - Green - Apple Barrel 21136E Acrylic Craft Paint, Matte Finish, Kelly Green
    - Blue - Apple Barrel 21142E Acrylic Craft Paint, Matte Finish, Cobalt Hue
    - Yellow - Apple Barrel 21131E Acrylic Craft Paint, Matte Finish, Bright Yellow

4. Match Duration and Structure

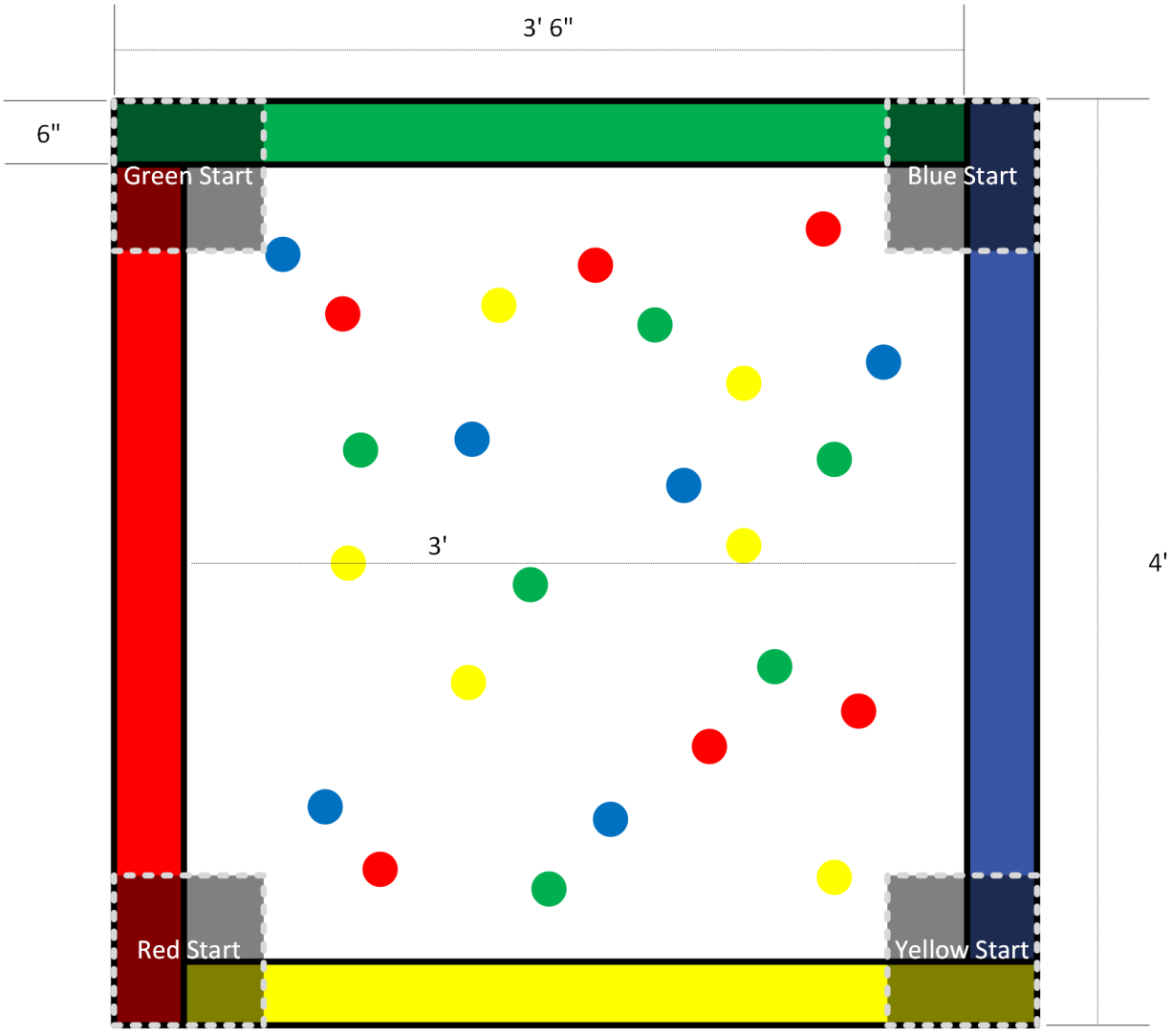
- Each match will last 2 minutes.
- All robots are activated simultaneously.
    - The judge will count down from three and the students will press the robot “go” button on zero. Thus, “three, two, one, press”.
- At the end of the match, no additional movement or scoring is allowed.
    - If a robot fails to stop after two minutes, the team will need to pick the robot up and the judges will reset the position of the pucks if necessary. This will not disqualify the team.

5. Additional Rules

- Robots cannot intentionally push or drag pucks. If accidental contact with the wheels of the robot causes puck movement, that is acceptable. Robots are required to pick up pucks. If a scooping mechanism is being used, it must be designed to gather and process one puck at a time.
- Robots cannot horde pucks; a robot can only move if it is holding zero or one pucks. If it moves with 2 or more pucks, it will incur a 5 point deduction for each observed violation up to a maximum of –20 points.
    - For clarification: If a robot stops while holding a puck, it can pick up another puck to investigate it and decide which puck to keep. Once one is puckarded, the robot can continue to move.
    - Robots are noisy, if the design and behavior is honest, teams will not be penalized if the robot accidentally violates this rule. Judges will have the final say over if it was a random accident or intentional.
- While there will always be four colors each match, there may not be four robots. The number of opponents will be known ahead of time and the teams can make modifications to the robot's code if desired; assuming these changes are within the above rules and do not delay the start of the match. The number of pucks will always be the same no matter how many robots there are.
- Having a robot purposely ramming or interfering with another robot is a disqualifying behavior; teams will receive -20 points. This does not include the moving of your opponents pucks.
    - Bumps and interference is expected given multiple robots in a small environment. If the contact/interference is accidental during the honest completion of the event, then no penalty will be given. Judges will have the final say over if it was a random accident or intentional.
    - Examples:
        - Robots backing up into each other will not incur a penalty. However, a robot with no obstacle avoidance whatsoever could incur the penalty as the team is relying on pure chance.
        - A robot's wheel knocking a puck out of play will not incur a penalty. The judges will place the puck back on the boarder of the field where it fell out of play.
        - Chasing other robots is not allowed. The focus of your robot should be to avoid collisions and to collect and position pucks.

- If robots get tangled, the judges can untangle them, pick them up, and place them in the start zone of their color. Robots will not be reset if they are sent back to the starting locations. To aid in this, teams should have a colored magnet, Velcro, or other variable marking spot to indicate what color the robot is during that run.

- Completely leaving the field of play. If a robot completely leaves the 4’ x 4’ play area, the robot will be removed from play; however, the team can still count the points as normal at the end of the round.
- It is permitted to enter all goal zones and to move any pucks based on the rules above.



The start zones are just for show, there is no physical representation on the board. All start zones ar 1' x 1' squares in the corner of the play area.

6. Contact

For all questions related to the rules of this contest please e-mail Dr. Fine (finebt@uwec.edu). For a quick response please use the subject line “MICS 2026 Robot Rules Question”.