Starter: Locker Room Mission (Ages 13–15)

Simplified, clear, and complete version of the official rules

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1. Overview of the Challenge

This category is more advanced. Students must program a robot that performs a **multi-step mission**, including:

1. Taking the **Capelli Team Box** from the Locker Room to the Coach.
2. Receiving the **team color of the round** (RED or GREEN).
3. Retrieving the **correct color cube** and delivering it to the matching big circle.
4. Unlocking the **stadium gate**.
5. Sorting **three colored tokens** inside the maze based on random placement.

The mission requires autonomy, logic, and navigation accuracy.

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2. Mission Story (Theme)

The team is preparing for a match. The robot plays the role of the logistics runner:

- Collects the team's main equipment (Team Box).
- Brings it to the Coach for approval.
- The Coach announces whether the team wears **RED** or **GREEN** today.
- The robot must deliver that team's color kit to the correct field location.
- Deliver the remaining equipment (RED, GREEN, BLUE) into the correct stations inside the maze.

It's a simulation of pre-match preparation and field setup.

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3. The Field & Zones

3.1 Locker Room (START Zone)

- Located bottom-left.
- Marked with “Capelli Locker Room Robotic Mission”.
- The robot **must start fully inside** and must already be **touching or carrying the Team Box**.

3.2 Scan Station / Coach Approval (bottom-right)

- Robot drives here while carrying the Team Box.
- At the Scan Station, the robot must **scan the randomized color card** placed by the referee (RED or GREEN).
- The referee **lifts the Team Box** using the special mechanism to simulate “approval.”

3.3 Big Delivery Circles

- Deliver the cube located in the center zone on the matching RED or GREEN square, based on the scan result in the Scan Station.
- **The cube must be delivered to the corresponding big RED or GREEN circle zone.**
  - **RED big circle** → right side of the field
  - **GREEN big circle** → lower middle area

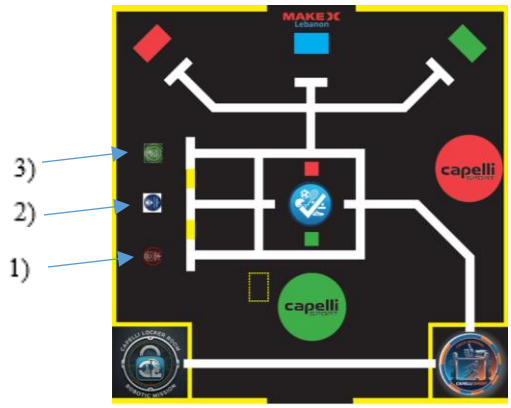
The robot must deliver the cube **matching the team color drawn for that round**.

Correct delivery → **opens the stadium gate**.

3.5 Stadium Gate / Barrier

A small yellow barrier near the maze entrance.
It is considered **closed at the start**.
It becomes **"open" only when the correct color cube is delivered correctly**.

3.6 Distribution Zones (A, B, C)



On the left side of the maze:

1) **Zone A**
2) **Zone B** (always BLUE)
3) **Zone C**

Before each match:

- A card determines **RED in A & GREEN in C**
  or
- **GREEN in A & RED in C**
  (Blue is always in B.)

3.7 Maze Color Targets

Inside the maze there are 3 targets:

- RED target
- GREEN target
- BLUE target (center)

Each token must be delivered to its matching target.

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4. Pre-Match Randomization

Two random cards are drawn:

4.1 Team Color Card

Determines which team plays this round:

- **RED** or
- **GREEN**

This decides:

- Which pickup zone the robot must go to
- Which big circle receives the cube

4.2 Zone Assignment Card

Determines how RED and GREEN tokens are placed:

Option 1:

- RED in Zone A
- GREEN in Zone C

Option 2:

- GREEN in Zone A
- RED in Zone C

BLUE is always in Zone B.

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5. Match Procedure

Phase 1 – Start in the Locker Room

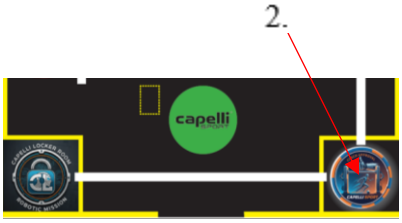
- Robot begins fully inside this zone.
- Robot must be **in contact with the Team Box** at T=0.

Team Box Structure Requirement

- Each team **must design and build a Team Box attachment** (a loop, hook, or frame) that allows the robot to securely carry the Team Box from the Locker Room to the Scan Station.
- This attachment must be fixed on the robot before the match starts.
- When the robot arrives at the Scan Station, **the Team Box will be removed by the referee**, not the student.

Phase 2 – Go to Scan Station

1. The robot arrives at the Scan Station **while carrying the Team Box**.
2. A **color card (RED or GREEN)** is placed **in front of the robot, centered in the scanning zone**.



3. The robot must **scan the card autonomously** to detect the team color for that match.
4. Immediately after scanning:
    - The **referee removes the color card**
    - The **referee removes the Team Box** from the robot
5. **Mandatory 4-Second Pause**
    - After the scan is completed and the objects are removed,
      the robot must remain completely still in the Scan Station for 4 seconds.
    - After the 4-second pause, the robot may continue the mission.

This prevents accidental movement and ensures consistent evaluation.

Phase 3 – Deliver Active Team Color

Depending on the color drawn:

If RED:

- Go to RED pickup zone (top-left).
- Retrieve RED cube.
- Deliver to **big RED circle** (right side).

If GREEN:

- Go to GREEN pickup zone (top-right).
- Retrieve GREEN cube.
- Deliver to **big GREEN circle** (lower middle).

Correct delivery =
✓ +20 points
✓ Stadium gate opens (+5 bonus)

Wrong delivery = –10 penalty and gate stays closed.

Phase 4 – Gate Opens

If correct delivery was made, the referee declares the gate **open**.
Only then may the robot enter the maze area.

Phase 5 – Sorting Zones A/B/C

Robot must:

1. Visit Zones A, B, C.
2. Collect each token (RED, GREEN, BLUE).
3. Deliver them to their matching color targets inside the maze:

- RED → red rectangle
- GREEN → green rectangle
- BLUE → blue target

Correct = +10
Wrong = –10

Phase 6 – Finish Pad (Optional Bonus)

Robot enters the dashed yellow Finish Pad.

If full body is inside at STOP → **+5 points**.

Phase 7 – STOP

Robot stops immediately.
Referee inspects all placements.

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6. Scoring Summary

Main Phases

- **+5** Leaving Locker Room with Team Box
- **+10** Reaching Scan Station with the box
- **+15** Coach approval (box lifted)
- **+20** Correct team-color delivery
- **–10** Wrong delivery
- **+5** Gate bonus (only if delivery was correct)

Sorting

- **+10** per correct color target
- **–10** per incorrect target

Finish Pad Bonus

- **+5** if fully inside at STOP

Final Score

Add all earned points and subtract all penalties.

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7. Robot & Autonomy Rules

7.1 Safety

- Only educational robots (mBot2, CyberPi, etc.).
- No dangerous components.

7.2 Start Conditions

- Robot starts inside Locker Room touching the Team Box.
- No pre-loaded cubes.

7.3 Movement / Control

After GO:

- No joystick driving
- No touching the robot
- No adjusting tokens
- Only pre-programmed routines allowed

The only human action allowed:
→ Referee lifting the Team Box at the Scan Station.

7.4 Object Handling

Robot may push, carry, scoop, or drag tokens.
Tokens must end **fully inside** the target zone to count.

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8. Referee Process

Referee checks:

1. Team Color Card
2. Zone Assignment Card

3. Locker Room departure
4. Scan Station arrival + box lift
5. Team-color cube delivery
6. Gate status
7. Sorting accuracy
8. Finish Pad bonus
9. Illegal contact / human assistance

A signed score sheet is produced.

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9. Ranking & Finals

Qualification

- Each team has **2 runs**.
- Best score is used.

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