

# RoboRAVE Greece

Today's Play, Tomorrow's Pay



## Fast Bot

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RoboRAVE Greece

Our slogan is : "Today's Play, Tomorrow's Pay."

## 1. FastBot

### FastBot Challenge Rules



#### Goal:

Design, build, and program a **line-following robot** that can follow a **black line on a white background** around a **closed-loop race track** for a specified number of laps, according to the requirements of your team's division. **Middle School and higher divisions may include intersections.**

## Who Can Participate

Teams competing in this challenge participate in the following divisions:

- Ages 6 -10 years old ( Elementary School ) - Born in 2016-2020
- Ages 11-14 (Middle School) - Born 2012 - 2015
- Ages 15 -18 (High School) – Born 2008 - 2011
- Ages 19+ ( University / Professional ) – Born in 2007 and before.

**Note:** If fewer than 5 teams are registered in any division, the Event Director has the option to combine divisions.

## Requirements

**Robot:** Autonomous robot, any platform, valued at  $\leq$  **Euro 1,500**, and compliant with the following design restrictions, which will be verified during **Check-In**.

#### Registration / Check-In:

- An **IR sensor or Color sensor** **must be coded and used** to track the line throughout the entire challenge (**REQUIRED**).
- The robot must demonstrate that it is running **line-following code** on a test track.
- The robot's volume must be  $\leq$  **65,030 cm<sup>3</sup>** [Click Here for the Video!](#)

- The robot **must have and use sensors** to track the line throughout the challenge.

## General Rules

- The Event Director will establish the **number of official runs allowed** and how many of those runs will count toward the **aggregate score** used to determine the **top 8 teams** that will compete in the tournament.
- Divisions may compete on the **same track** with an increasing number of required laps, **or on different tracks** with increasing difficulty based on track design (e.g., line width, number of intersections, etc.).
- The score for each run is the **elapsed time in seconds and hundredths of a second** (e.g., **3.52 seconds**).
- The robot has **3.00 minutes** to complete the run. Any robot that exceeds three minutes will be assigned a **maximum time score of 180 seconds** for that run, with **zero (0) bonus seconds** awarded.
- A **line-following program using an sensor** must control the robot's movement **at all times (REQUIRED)**.
- **Only players** may operate and handle the robot during the challenge. Remember: *"Players play, coaches coach, parents cheer."*
- **Touching the robot at any time** ends the run and results in the **maximum time score (180 seconds)**.

## Challenge-Specific Rules

### Track:

- Tracks are typically printed on **durable paper** or **PVC vinyl backing**.
- The **FastBot (robot racing) challenge field** measures approximately **120 cm x 240 cm**.

### Elementary School Division:

- No intersections
- Black line **1.25 cm** wide

### Middle School Division:

- Up to **one intersection**
- Black line **1.25 cm** wide

### **High School Division:**

- Up to **two intersections**
- Black line **0.75 cm** wide

### **University / Professional Division:**

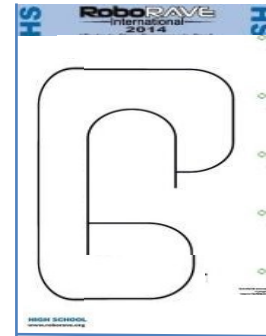
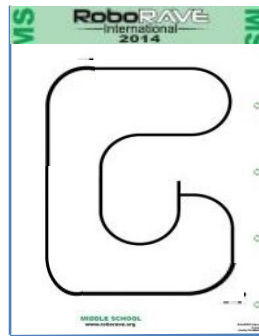
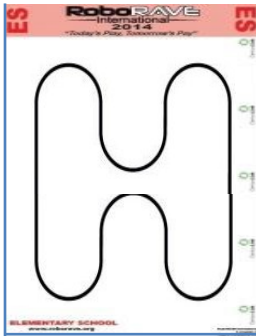
- **Two or more intersections** of different styles
- Black line **0.75 cm wide or thinner**
- Line may be **solid, dashed, broken, or a different color**

### **Alternative Options:**

- Use the **HS track** with a **higher lap requirement, or**
- Create an **ADVANCED track** with higher-difficulty elements, which may include:
  - Dashed or broken lines
  - Multiple colors
  - Circular turns
  - Variable line widths
  - Variable line ink saturation
- The line will be **no closer than 10 cm** to the edge of the track or to any other line.
- Advertisements or printed instructions may be placed anywhere on the track surface but must be at least **10 cm away from any line**.
- Curves may have **different or changing radii** on any division track.
- The **UP lane** is the same as the **HS lane**, **BUT** it may include a greater variety of intersections, colors, and line types (dotted, dashed, thick lines).

### **For physical events:**

- The challenge may take place in areas with **natural lighting** on the tracks, which can change lighting conditions. Teams must be prepared to **design for and adapt to natural lighting variations**.



## Scoring

- The score for each run is determined by measuring the **elapsed time from start to finish in seconds and hundredths of a second (000.00)**.
- A **maximum score of 180.00 (full 3 minutes in seconds)** will be recorded for any run that does **not finish within the three-minute (3.00 min) limit**.
- A **maximum score of 180.00 (full 3 minutes in seconds)** will also be recorded if **any team member touches the robot during the challenge**.

## Tournament Scoring

- All participating teams will compete in a single qualification group.
- During the Qualification Round, each team is allowed to perform six (6) official attempts on the track. For the purpose of qualification, only the best attempt of each team is taken into account.  
Based on the results of these attempts, the top eight (8) teams overall will advance to the Final Round.
- Final Round:  
Each of the eight qualified teams is allowed to perform four (4) final attempts.  
The winner of the competition is determined by the best attempt of both Qualification and the Final Round.

In case of a low number of participants, the organizer may decide not to hold a final round, and the final ranking will be determined based on the qualification round.

