

# robotex<sup>17</sup>

LINE FOLLOWING  
COMPETITION  
INSTRUCTIONS



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## 1 Introduction

1. Line following is one of the most popular robotic competitions in the world and it has been carried out at Robotex for 6 years. The task for line following robots is to drive through the track that is marked with a black line, as fast as possible. For line following it is possible to create different competition categories such as regular, LEGO, Engino, Makeblock, RCX, enhanced (with obstacles) etc.

## 2 The Field

1. The field consists of 6 separate modules which divide the track into stages:
  - a. First stage is usually easier and meant for LEGO (or Engino, Makeblock etc.) robots. Consists of easier turns and curves.
  - b. Second stage alongside with the first stage is for more advanced line following. The second stage has more complex design and consists of harder curves and sig-sag sections.
  - c. Third stage connects the two mirrored tracks and makes the whole field into one big field which can be used for enhanced line following – this allows the addition of different obstacles on the track. This module can also be used as a endpoint for the first and second stage as it implements circles where the robots usually will start spinning until it is stopped and removed by the operator.
2. The fields stand alongside eachother and are mirrored.
3. The 15 mm wide line (matt), or track, has been printed on the field with black ink.
4. Field is made out of PVC plastic.
5. The start and finish lines are marked on the field separately.
6. The time measuring system areas are marked as squares on the field.

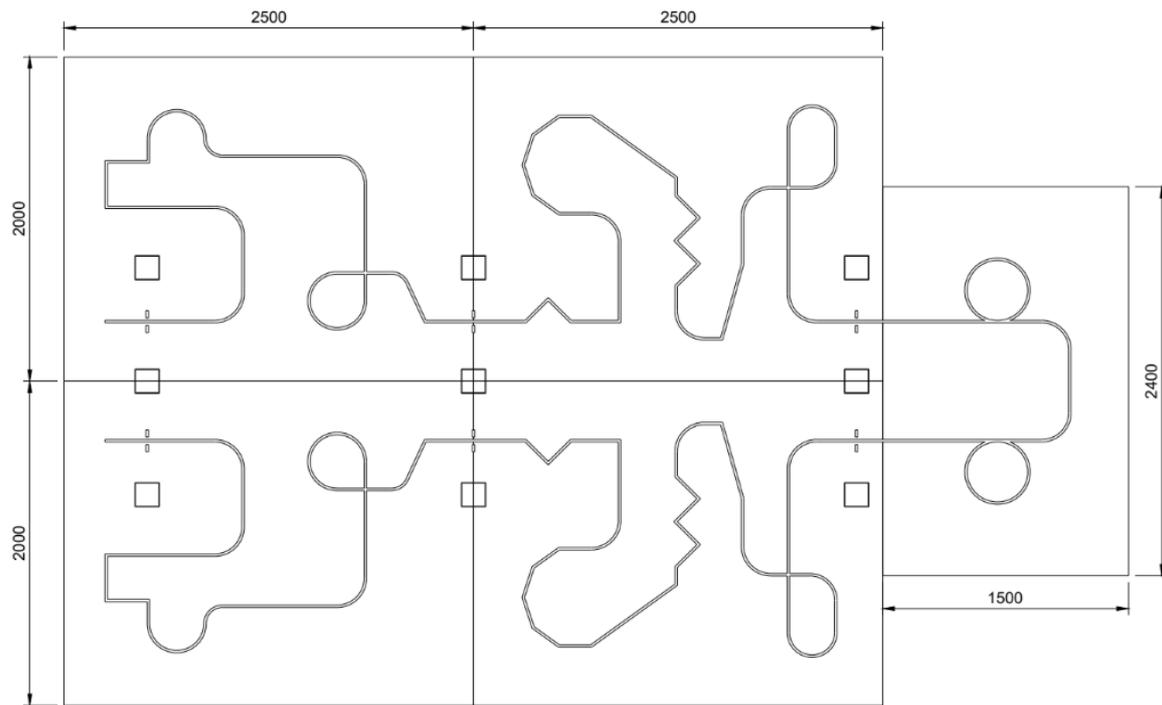


Figure 1 Robotex 2017 Linefollowing competition field

### 3 Organizing the competition

1. All robots need to pass the technical inspection. Robots must be built according to the rules.
2. The maximum dimensions of the robot are 25 x 25 x 25 cm and mass 1 kg. For different categories you can set different dimensions and weight classes but make sure that the dimensions are defined.
3. Competition will be held according to your competition system – you can use a live queue or set a queue number to every robot so they will know when they will have to compete.
4. The time will be measured with an optical time measuring system or with a stopwatch. Take into consideration that if you decide to use a stopwatch then human error will come into play and for faster robots it will be impossible to get an accurate reading. Stopwatch is however good for slower robots and when you don't have many robots in the specific category.

## 4 Notes and suggestions

1. If you print the competition field similarly on PVC and make it in multiple modules then make sure the field stays together throughout the competition – you may need to use tape to keep the field together. Have the judges check the field every now and then that there are no cracks in between the joining parts.
2. Make sure the competition field is set up on an even surface.
3. Keep the competition field clean! Robot sensor are highly sensitive and if there happens to be any dirt on the field the robots might not detect the field correctly. Make sure to not allow any competitors to walk on the field and have the judges clean the field every now and then.
4. Invest in a good time measuring system as a stopwatch is not as accurate. Make sure the system works perfectly and the judges know how to operate it.
5. When designing a new line following track then make sure it is designed according to the following guidelines:

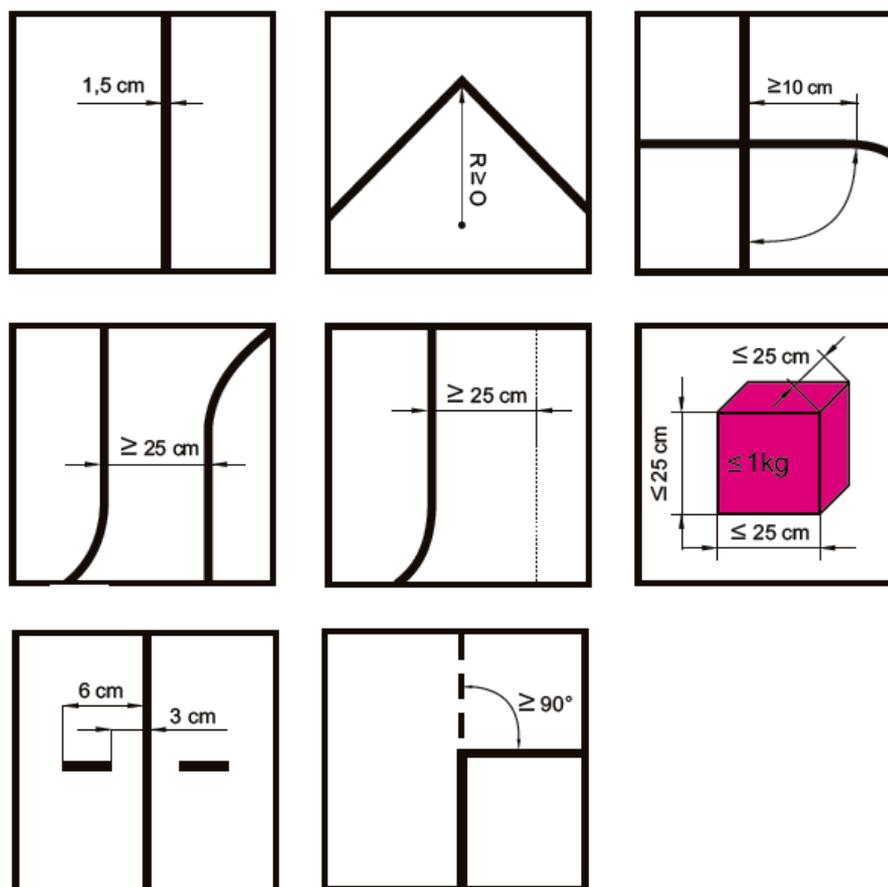


Figure 2 – Field desing guidelines

