ENGINEERS OF FUTURE

CATEGORY

FINAL STAGE RULES

BAKU 2025

Contents

1. Introduction

In the **"SAF-2025" "Engineers of the Future"** category, students will be given the opportunity to both demonstrate and develop their skills. In this category, with the help of Vincibot robots, young engineers will use critical thinking, creativity, and problem-solving skills to find solutions to the assigned challenges. They will first analyze the problem and then present solutions using coding and robotics technology.

Participation in this competition is an excellent tool for students to develop their creativity, logical thinking, and programming skills. The goal of the competition is to program the Vincibot robots in a specific way and ensure they complete the given tasks.

This category encourages important skills such as coding, logical thinking, problem-solving, and the 4Cs (creativity, critical thinking, communication, collaboration) in students from an early age. It also supports the spirit of research and creativity, helping participants learn about robot technology, strengthen their knowledge, and develop engineering thinking.

2.   Participation terms

2.1.   Each team must consist of 1 team leader aged 18 or older and only 2 participants between the ages of 8-10. Each participant can only join 1 team and can only participate in one category.

2.2.   A team can only apply to one category. Applications from the same team or individuals applying to different categories of SAF-2025 will be considered invalid.

2.3.   Only one team from each school (high school, gymnasium, or course) can participate in the competition. This means that each educational institution must hold a selection process among its candidates and register only one team for the competition.

2.4.   Each participating team must have its own robot, and the image of the robot must be uploaded to the corresponding field during the registration process. The ID number located on the bottom of the robot must also be entered into the corresponding field during registration.

2.5.   Participating teams are considered to have accepted all changes made by the SAF-2025 Scientific Committee and all the terms specified in the rules.

3.   Attention

3.1.   Participating teams must adhere to the spirit of competition, refrain from arguing or insulting others, avoid physical confrontation, creating provocations, or causing harm to other teams' projects, and should not take others' items without permission. Penalties for non-compliance with the rules will be applied based on the severity of the misconduct in the arena.

3.2. Participating teams must be aware of safety and should not engage in behaviors that threaten the safety of their own team or other participants. They must inform the responsible persons for each category when using electrical sources. The use of open flames and bringing dangerous items into the competition area is also prohibited.

3.3. Team leaders and accompanying members are not allowed to enter the competition field, nor are they allowed to intervene in the game from outside the competition area. If the team leader or accompanying person provides any form of support to the team or interferes with the games of other teams, the referee has the right to issue a warning, disqualify the team, and impose other penalties.

3.4. Each participant is limited to competing in one category. Duplicate registrations, fraudulent registration, falsification of the participant's age, unauthorized alterations to competition participants, etc., are strictly prohibited. If such actions are discovered and confirmed, the participant will be disqualified.

3.5. In the event of unforeseen circumstances not covered by the rules, decisions will be made by the coordinators.

4. Application method

4.1. Applications will be accepted through SAF's official website (https://saf.steam.edu.az/en).

5. Final stage

5.1. General information.

In this competition, teams will attempt to complete specific tasks using Vincibot robots. The goal is to transport oil barrels to the bunker and turtles to the island. Teams must do this within a specified time and in full autonomy.

**5.2.** How should the robots operate?
- Each team will use only one Vincibot robot.
- The robot must be programmed before the competition starts. No changes can be made to the robot once the competition begins.
- It is strictly prohibited to use a remote control or a computer to operate the robot. The robot must function autonomously.
- The robot must have mechanical arms made from its parts. These arms will be used to move the oil barrels and turtles.

5.3. 🔎 What does the competition field look like?
- The competition will take place in an area measuring 130 cm x 130 cm.
- The oil barrels and turtles will be placed in specific locations on the field before the competition begins.
- The bunker and island will be clearly marked on the competition field.

5.3.1. **Scoring System for the Robot Competition:**
- After the teams approach the competition table, the robots will be inspected by the judges. The robot, including its arms, must have a width (a) of 14 cm and a length (b) of 16 cm. (See Figure 1)
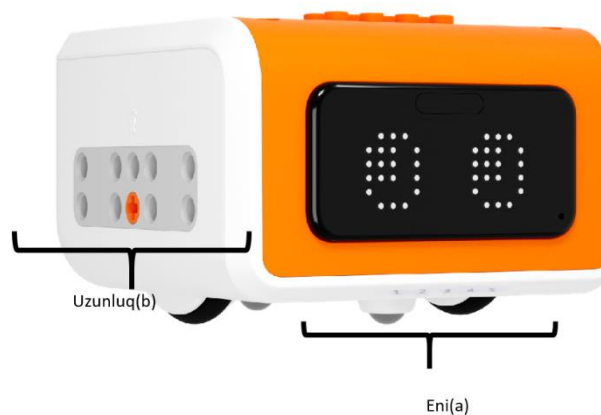
Şəkil 1. Robotun ölçüləri qol ilə birgə

- **Before the start**, each robot must be stable in its starting area. The initial direction of the robot may vary depending on the team's strategy.
- On the competition field, the robot must autonomously transport the turtles and oil barrels to the island and bunker, respectively, using its arms.
- At the end of the competition, points will be calculated based on the number of objects in the island and bunker areas.
- **Turtles**: Each is worth 10 points.
- **Oil Barrels**: Each is worth 5 points.
- Tasks completed using the color sensor will be evaluated as follows: 1 color = 5 points.

5.3.2. The robot may receive penalty points for incorrectly placed objects. Teams that violate the rules during the competition may face penalties or disqualification.
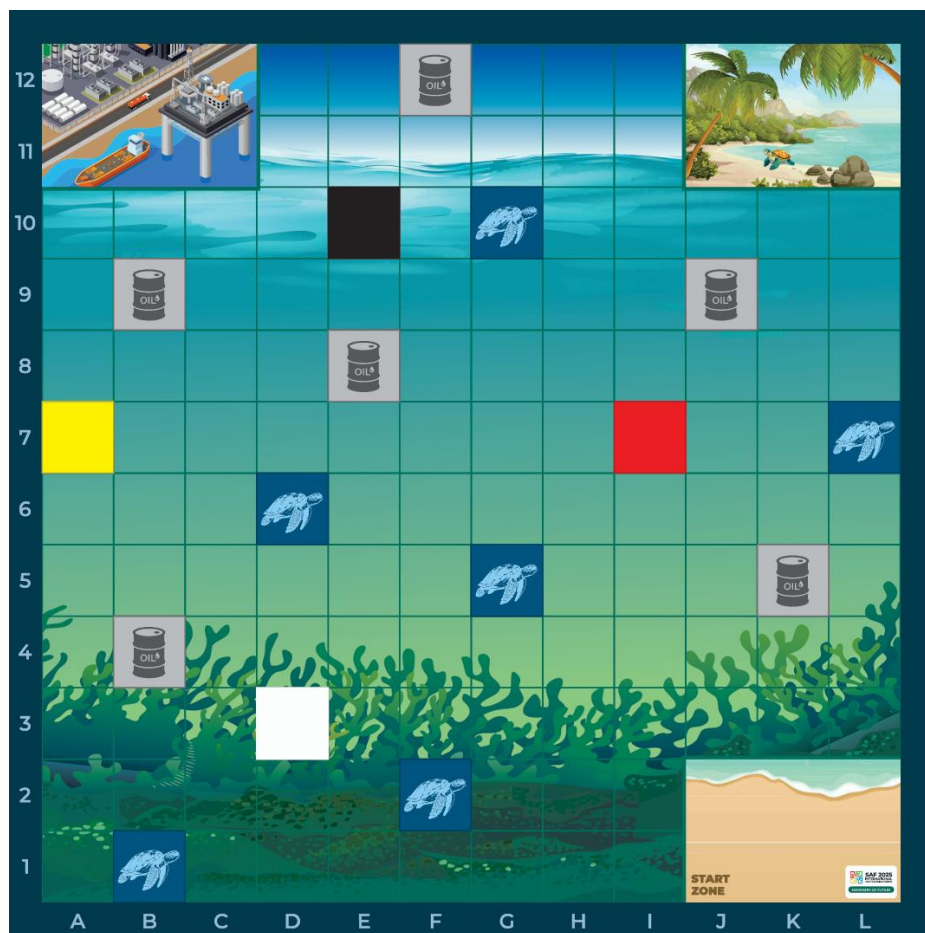
6. Evaluation criteria

6.1.   Evaluation will take place in two stages: Interview and Robot Game.

6.2.   The evaluation criteria for the robot game are clearly outlined in section "5.3.1."

6.3.   Teams will be evaluated by the judges based on the following criteria:

Programming Logic (30%)	The code should be structured and logical
Creativity and Strategy (10%)	Innovative approach to problem solving,optimality
Teamwork skills (10%)	Coordination of team members
Design and Creative Solutions (10%)	Design of robot's arms and mechanism

7. Competition Format and Round System

7.1.   The competition of each team on the race field will take place within 120 seconds.

7.2.   The race will consist of one round. Although the race consists of one round, the students can complete the tasks in multiple stages within the given time (120 seconds).The students can write different programs, upload them to the robot's memory, and complete the task in stages.

7.3.   When approaching the race table, the use of computers is not allowed. The codes must be ready in the robot's memory.

7.4.   The robot's movement must be ensured solely in an autonomous manner.

8.   What is prohibited?

8.1.   It is prohibited to touch the robot, control it externally, or interfere with it in any way during the competition!

8.2.   Team members are not allowed to remove the robot from the race field or physically interfere with it.

8.3.   If a rule violation is detected or if it is proven that the robot is operating with external interference, the team may be penalized with point deductions or even disqualified from the competition.

8.4.   It is prohibited to use mechanisms or additional control devices in the robot's design that do not comply with the competition rules.

8.5.   Only components from the company Matatastudio can be used in the design of the robot's arms.

8.6.   It is strictly prohibited to damage other teams' robots, and this may result in disqualification.

NOTE: In case any changes are made to the rules by the organizing committee, the information will be provided on the website https://saf.steam.edu.az.