MINESWEEPERS
TOWARDS A LANDMINE-FREE WORLD

Minesweepers International Competition Rule Book 2026 Scouts Category

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1. About the competition

Detection and removal of antipersonnel landmines is, at the present time, a serious problem of political, economic, environmental and humanitarian dimension. The humanitarian demining activities carried-out to remove landmines and UXOs from the vast contaminated areas in the world are not on the same level of the problem. Robotics systems can provide efficient, reliable, adaptive and cost-effective solution for the problem of landmines and unexploded ordnances (UXOs) contamination [IEEE-RAM2015]. Minesweepers: Towards a Landmine-free World is the first international robotic competition on humanitarian demining established in 2012. This competition aims at raising public awareness of the seriousness of landmines and unexploded ordnances (UXOs) contamination and fostering robotics research and its applications in the area of humanitarian demining in the world. In this competition, each participating team constructs a teleoperated/autonomous unmanned ground/aerial vehicle that must be able to search for buried and surface-laid anti-personnel landmines and UXOs. The position and the type of each detected object are visualized and overlaid on a minefield map. The robot must be able to navigate through rough terrain in an indoor arena that mimics a real minefield. More than 400 robots by 3000 competitors from 15 countries and 70 universities have participated in the previous seven edition of the competition. The ultimate goal of the Minesweepers competition is to put into practice the strategic mission of IEEE, "…to foster technological innovation and excellence for the benefit of humanity" and to serve as an educational and a research forum to provide efficient, reliable, adaptive and cost-effective solutions for the serious problem of humanitarian demining in many affected countries in the world. Moreover, the applicability of the robotic systems presented in this competition can be extended to a wide range of other applications such as security and surveillance, search and rescue, health monitoring of civil infrastructure and environment monitoring.

2. Rules and guidelines

2.1 Timeline

Teams Registration Starts	April, 2026
Teams Registration Ends	July, 2026
Orientation Session	May, 2026
Technical Submission	July, 2026
Main Competition (Mission+Presentation)	August, 2026

2.2 Registration

- Fees:
  1- **540$** for a full package including registration fees for 5 members (4 students & 1 supervisor) and full robot kit.
  2- Fees for Egyptian teams is supported to be **270$** for a full package.
- Additional fees may be added according to the international venue (only for the international qualified teams).
- Registration or regional fees do not include any accommodation or catering for teams from Minesweepers' competition.
- Please write all data in English.
- Please write the names as it will be printed in the certificates.

Registration steps:

1. Fill the team data form.
2. Complete the payment.
3. After payment is successfully completed, you will receive a confirmation mail that includes all the data you have written in the form.

Note: You may start working on your robot during the registration steps and do not wait to the registration deadline.

2.3. Competition Phases

The competition is divided into **two phases**, the eligibility and the classification phase. If you have local or regional competition in your country, you will pass through these two phases to participate in the international final one.

2.3.1. Eligibility Phase

All the registered teams must send by email (tech@landminefree.org) a 3-minutes video showing the design and the operation of their robot And a c**omprehensive technical presentation** . The deadline to submit is July 20, 2026.

The accepted teams to participate in the classification phase will be notified by email.

At this stage all teams have to prepare their robot for the **local competitions** (if there will be for your city), then for the **regional competition**, your score will be out of 10 according to this evaluation and will be added to your mission score of the Classification Phase in round 1 only.

You can check more instructions and guidelines in Appendix A and Appendix B.

2.4. Minefield Rules

1. Then robot has to search the field to find buried mines. When the robot detects any kinds of mines, it should produce a light signal and siren.
2. Robot has to able to navigate through rough environment of the minefield and avoid obstacles.
3. During the competition only one member will be the driver for each robot and two other members as co-drivers, only these three members will be around the arena and the remaining members will be outside the second fence.
4. The driver and co-drivers must wear safety vests and helmets during the team's game, which **will be provided by the competition organizers.**
5. During the reset time/ maintenance only one member can attend the arena. The minefield judge should approve allowing another team member if it is required.
6. The competition time allowed for each team is 10 minutes to finish the competition's mission including the rest time.
7. Any modification in the robots is not allowed unless reset time is requested.
8. Five minutes before the game beginning as a setup time for each team to make the last preparation of the robots, to fit their robots' sensors to the lighting and the material of the arena.
9. Jury committee will calculate the team's score and prepare the field for the next team during another 10 minutes.
10. The game will end with one of the following conditions:
    - The robot finishes the mission.
    - The dedicated time finishes.
    - Team dismiss the game.
    - Any cheating happens.

11. The competition will not provide Wi-Fi or electricity in the arena.
12. The organizers have the right to photograph and videotape the event and the right to reproduce, modify and use the photographs and video tapes for various media.

3. Scouts Category

Scouts Category: for only elementary and middle school students where the competition mimics and simulates the advanced categories missions in a small-scale robot and game field.

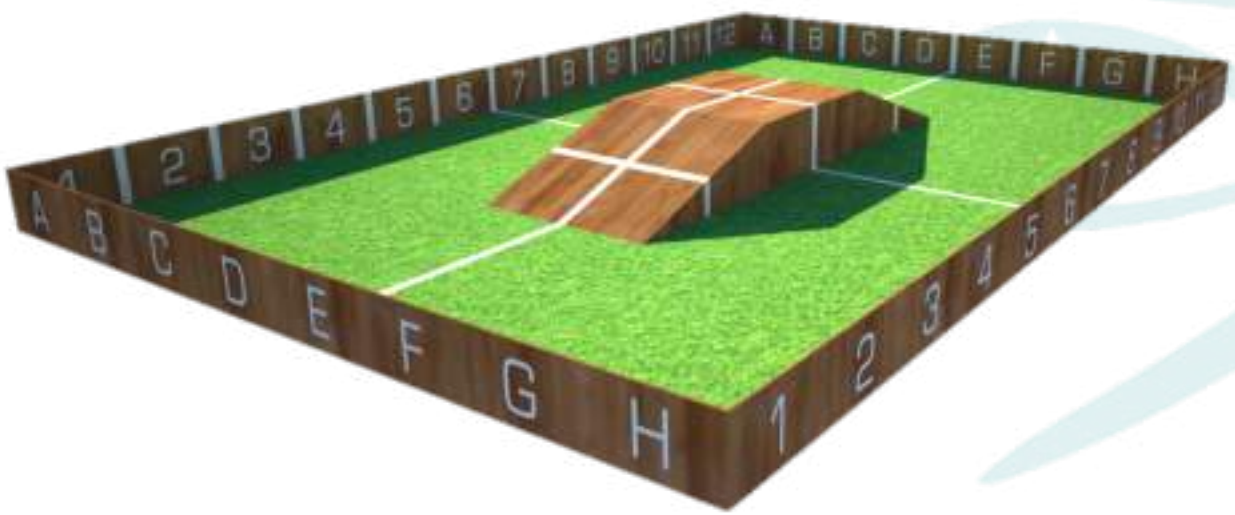
In this category, the following tasks are to be performed by the participating teams, a team consists at least of two members and at maximum five members:

- Search for buried metallic objects square sheet shapes using teleoperated or an autonomous ground vehicle.
- Generate and fill manually a sheet describing mines' locations, check the attached Appendix G.

Minefield

The competition arena is a plain square area with an internal dimension of 4m x 6m, that is totally constructed from wood and lined with soft fiber fabric material that mimics the grass environment and has a surrounding fence with a height of 30cm and a mountain inside that has 36cm height and 3m X 1m length and width and contains buried mines.

Game field is delimited by virtual cells in order of columns arranged from A to H and rows arranged from 1 to 12 GPS coordinates. The competition area is marked only by 5cm width white line on the inner fencing and on the ground which divides the field into four quarters for robot and operator guidance. There are no mines on the separate virtual lines between cells, mines are totally kept inside the cell.

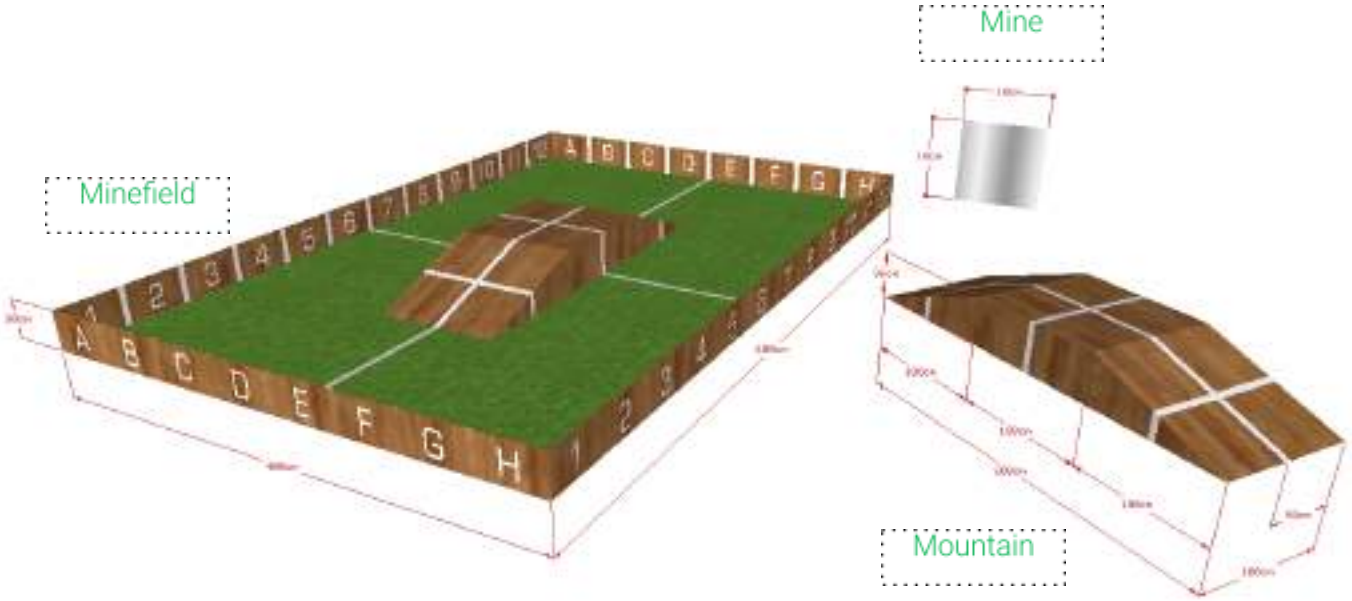


The Mines

All mines are buried and made from metallic sheets with negligible thickness, with approximate dimensions of 10cm x 10cm (LxW). These mines are completely buried underground with an approximate depth of 1cm. These buried metallic cubes mimic real anti-personnel (AP) blast mines. Real AP blast mines are deliberately designed to be small (typically 6-14 cm in diameter): this makes them cheaper and easier to store, carry and deploy. AP blast mines rely on the effect of explosive blast to damage the victim, and are designed to detonate when the victim steps on them. These mines are often buried in order to camouflage their presence.

**Location of mines may be changed between matches.*

**All mines are scattered randomly.*

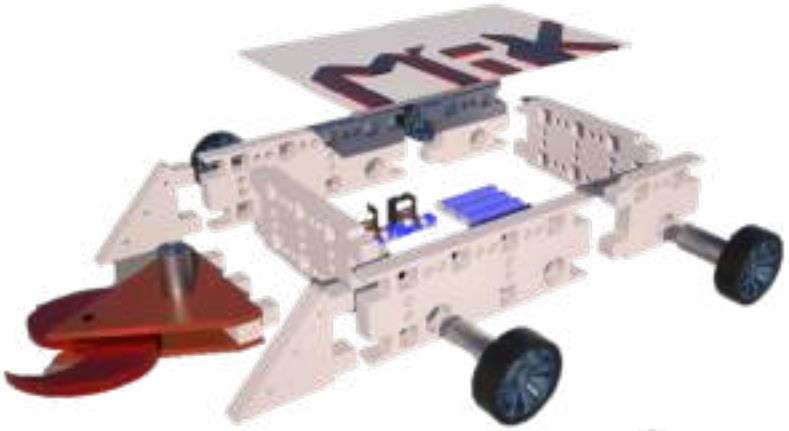


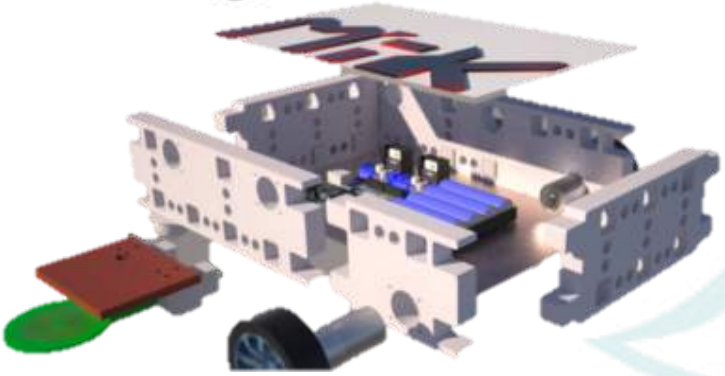
The Robots

Each team must use a teleoperated or an autonomous robot per game. The robot has to be made by team members. Teleoperated robot must be operated remotely from a base station located outside the minefield.

The robot can be UGVs, with size limitations of 55cm X 55cm X 55cm (LxWxH). Wireless controller based on ZigBee/BT for example is suitable to communicate the base station with the robot due to the small size of the field. In case of autonomous robots, all the actions of the robot must be completely autonomous without human intervention. Autonomous robot will be rewarded a 20% bonus over teleoperated robots.

- Each team must build one manual/Automatic remotely controlled machines using the MRKTM robot kit provided by the MM organizers.
- The robot must be built at least using the MRKTM blocks.
- The team is free to edit and reform the blocks of the MRK as needed.
- The team can create its own sensory/addons and attach it to the MRK blocks.
- All robots must have an attractive appearance and colors.
- All machines must be safely activated and deactivated.
- Robot dimensions must not exceed (55X55X55) cm (Width X Length X Height).
- Robot total weight must not exceed 5.5Kg.
- Manual robots must be operated via means of wireless remote controllers.
- The voltage of the power sources used is DC and has no voltage limitation.
- All batteries and terminals should be isolated and protected well from any direct or indirect short circuit.
- All wires and electrical systems must be inside the robot.
- Any addon structure to the robot body / Sensors must be built totally from nonmetal materials.
- Using pneumatics or hydraulics is not allowed, “Dampers are allowed”.





Mines Detection

Each team can select their own set of sensors for detection of mines. When a robot detects a mine, it has to autonomously report this event using a light blinking signal or a warning siren.

Mission Score

- **10 points** for detecting every metal mine.
- **30 points** for complete surf of the field if 80% of mines are detected correctly.
- **-10 points** for passing over a mine without detection.
- **-3 points** failure in producing a light signal and/or a siren for a detected mine.
- **-2 points** for every minute of reset time.

Extra bonus

- **Note you can have only two bonus factors of the following:**
  - **The score will be multiplied by 1.2** for using an autonomous robot.

Check the score sheet in Appendix F

4. Appendices

4.1 Appendix A

Minesweepers Competition 2026

Video Content and Instructions

- Video

- Basics & notes to accept video

1- Period: 3 minutes (not less nor more)

2- Your video Title may contain team name, school, academy, name of your device then followed by – The Minesweeper competition.

3- All videos should be uploaded to YouTube website then you should send the link (URL) attached with the report.

4- NO uploaded videos will be accepted [attached files or link (URL) from any other website]

5- You can use any kind of software that helps to improve video output like [Movie Maker – Adobe Premiere - After Effects -...]

6- You can use music or sound effects but using it should not be covering any speaker voice in the video.

7- Putting your own team logo and university logo is also preferred.

8- Any Speaker in the video should represent himself and his role in the team.

9- Not necessary to make all team speakers in the video.

a. Language used is ENGLISH to talk or to write notes of captions on the video.

- Director view

- Light, voice, camera used also any kind of tools should be tested before the first shots.
- For voice improvements you can use these soft wares [Mix craft –Audacity]
- Using wired microphone is preferred for best voice output in the video.
- Try to record voice separately to help you to improve the voice output.

- Prepare a silent room to record the video and sound and do not forget to test everything before starting to take first shots.
- Training before the first shots is also preferred to get excellent video.
- Don't forget that you have 3 minutes maximum so prepare a small scenario, using stopwatch could help you
- Zooming in and out too much destroys your video.
- Try to make many versions of video and select one of them to be your video.

- Technical view

The target of this video is not just to be an expert of making movies but we as Minesweepers committee want to make sure that you show the specs of your robot and how it will compete with the other robots in our competition.

- Show your final works on your robot [new design – new idea – power & control circuits]
- Build a small arena and show your robot detects mines.
- Competition has many challenges, talk about your technical solutions for it.
- If you did not finish your robot, just show us your power & control circuits, design of body using software and your final draft plan to finish this robot.
- What problem has your team face to finish this robot?

- Spirit

Here you are some ideas to make your video better

1- Smile all the time in the video.

2- If you have slogan just say it.

3- Say that you will win the first place.

4- Say any word that inspired you to start this project.

5- Finish your video with a gathering photo for your time.

Put your Video YouTube link here:

4.2 Appendix B

Minesweepers Competition 2026

Technical Presentation Submission

Submission Criteria

For teams participating in this category, you are required to submit a **comprehensive technical presentation** that will be evaluated by a panel of expert judges. Your submitted file must serve as a complete and standalone explanation of the engineering behind your vehicle's design and operation.

The judges will evaluate the presentation based on the technical depth, clarity of information, and the creative solutions implemented to solve the mission tasks.

Required Presentation Content

Your presentation must provide a detailed breakdown of the following areas:

- **Overall System Overview:** A high-level look at the robot's architecture..
- **Mechanical Design:** Detailed insights into the chassis and locomotion system.
- **Sensors & Detection:** The mechanism and logic used for landmine identification.
- **Electronics & Control:** The control system architecture and the specific platform used.
- **Mapping & Localization:** The methods used for position tracking and environment mapping.
- **Navigation Strategy:** Your planned logic for traversing the arena.
- **Environmental Durability:** Engineering choices made to handle rough terrain and high-heat conditions.
- **Project Management:** Team structure, budget allocation, and the project timeline/working plan.
- **Future Vision:** Your team's plan for the technology or project beyond the competition.

Guidelines for a Successful Technical Submission

- **Software & Format:** You are free to use PowerPoint, Prezi, or any other professional presentation software. Ensure the final file is exported in a standard format (e.g., PDF or a self-contained slideshow) to preserve layout and media.
- **Technical Accuracy:** Research and include the exact specifications of the components used in your vehicle. High-level technical detail is expected for this category.
- Incorporate **clear, simplified diagrams** (mechanical CAD renders, electronic schematics, and software flowcharts).
- Include high-quality **photos or video embeds** showing the vehicle in its completed, working condition to verify the design's physical implementation.

4.3 Appendix F

Mission scoring sheets Minesweepers Competition 2026

Scout scoring sheet

Team name: Judge name:

Action	Count	Unit/Subtotal	Score
Weight check the robot weight must not exceed 5.5Kg			
Above 5.5kg	Yes No	Disqualified	
Arena Score: The following score will be based on the performance of the robot in the competition arena and will be observed and calculated by the in-field judge.			
Detected Underground Mines		10	
Completely Scan the field and 80% of Mines Detected (Systematic Motion)	Yes No	30	
Passover Mine without Detection		-10	
No light signal and/or a siren		-3	
Reset Time (-2/1min)		-2	
Mine field score:			
Autonomous robot	Yes	Multiply*1.2	
Final score:			

4.4 Appendix G

Mission map sheets Minesweepers Competition 2026

Scout map sheet

Team name: Judge name:

Please mark/highlight the cells where you find buried mines.