

**REGULATIONS**  
**«EDUCATIONAL ROBOTICS – ENGINO, LEGO & OPEN CATEGORIES»**

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## 1. Introduction

The challenge of educational robotics provides an opportunity to students and educators of primary, secondary and university level but also to adults to cooperate, to exploit their fantasy and creativity to develop constructions in which robots play an important role.

It is offered in a dual mode, firstly to primary school students and educators who are invited to implement a construction on a specific theme and by using specific and common platforms. Secondly, to gymnasium, lyceum, university students and educators and adults who are invited to decide on a theme and without any limitation as to the platforms to be used to implement innovative robotic constructions and applications.

## 2. The Theme

### 2.1 For Engino & Lego Categories

1. This year's theme for Educational Robotics ENGINO and LEGO will be **THE ROBOTS FOR A SAFER WORLD** and team implementations may cover human safety in the various aspects of human life (personal, family, social, financial, etc.) but also safety of animal life.
2. Within the context of the theme, safety may relate to protection from natural disasters such as, but not limited to, earthquakes, floods, landslides, or mudslides, sand/dust storms, forest and wildland fires etc. but also from technical and digital threats.
3. The use and combination of Artificial Intelligence technology can prove to be innovative in the presentation of a relevant solution/construction. To this end, we remind you to review the [AI FOR GOOD INITIATIVE](#), which uses AI for a good purpose, but also actions such as [LETHAL AUTONOMOUS WEAPONS](#), which only contribute negatively to human existence.
4. In addition, technologies such as computer vision may prove equally useful for advancing the innovation of a solution.

### 2.2 For the Open Category

1. In the Open Category (OPEN) and, as the title of the category implies, the theme is open and is not specified. It is decided by the team and can concern and cover any aspect of life activity without restriction.
2. In the OPEN category it is allowed to use any number and any combination of robotic equipment types (e.g. indicatively Raspberry Pi and Arduino and Lego together in one construction), number of controllers, motors, sensors and other materials without restrictions.
3. Teams are urged to innovate by exploring ways to incorporate Artificial Intelligence in their solutions by taking advantage of the recent developments in the field. Computer vision

techniques can also be implemented to further advance innovation together with additional equipment.

- It is noted that the evaluation in the Open Category concerns all levels together and the best three constructions will be awarded.

### 3. Competition Objective

- The objective for the teams is to present a construction directly related to the theme of the competition, either specific or open based on the categories indicated in «**2. The Theme**» above.
- In the construction, at least one programmed robot has to play an important role in that it participates actively and interacts with the construction environment.

### 4. Categories

- The table below lists the Educational Robotics challenges, the age level of the teams and the robot platforms that can take part. Any references to "robots", from this point to the end of the document, include and refer to the platforms below.

**Table 1: Educational Robotics – Platforms, Categories & Levels**

Category	Platform	Primary 1 <sup>st</sup> – 3 <sup>rd</sup>	Primary 4 <sup>th</sup> – 6 <sup>th</sup>	Gymnasium 1 <sup>st</sup> – 3 <sup>rd</sup>	Lyceum	University	Special Category
EDUCATIONAL ROBOTICS LEGO	LEGO WeDO & LEGO SPIKE ESSENTIAL	√	√				
EDUCATIONAL ROBOTICS ENGINO	ENGINO MINI & ENGINO PRO	√	√				
EDUCATIONAL ROBOTICS OPEN CATEGORY	All platforms and their combinations			√			

## **5. The Team - Eligibility for Participation**

1. The competition is aimed at groups rather than individuals.
2. Each group can consist of two (2) – six (6) students.
3. Teams of the primary education must be accompanied by an adult, preferably their coach or teacher.
4. One student only who belongs in the "1<sup>st</sup> - 3<sup>rd</sup> Grade Primary" category can participate in a team of "4<sup>th</sup> – 6<sup>th</sup> Grade Primary". The opposite is not applicable.
5. Point 4 above applies for the levels of the open category accordingly.
6. The team defines one of its members as a leader who will be responsible for the communication with the Organizing Committee and the judges, for the technical control process and for operating the robot during the competition.

## **6. Programming Language(s)**

1. For the development of the program, any combination of programming language(s) supported by the respective platforms may be used.

## **7. Use of Computers**

1. Each project team can use any number of computers (or a combination of computers, tablets mobile phones) to execute the project.

## **8. The Robots**

1. There is no limitation as to the number of robots a team can use.
2. The robots must be programmable.
2. For the Engino and Lego categories, the robot should be constructed with original materials and parts on the corresponding platform.
3. The robots must fit on the track.
4. The robots must perform kinetic actions and automations.
5. There is no limit as to the number and type of sensors that can be used in the construction.

## **9. The Construction and its Wider Environment**

1. The construction should be implemented with original and licenced materials of the respective platform.
2. All parts of the construction including automation or mechanical parts propelled by motors shall be made of authentic materials of the respective platform.
3. The overall height of the structure may be up to 1.5 meters high.
4. Paper (of any size, thickness and colour), polystyrene, wood, aluminium and plasticine may be used for putting together the construction environment.
5. The use of materials not mentioned in point 4 above, is prohibited.

## **10. The Field**

1. The field is defined as “the floor of the structure, the base on which the construction and the robot are placed”.
2. The field is a do-it-yourself (DIY) area made of mat and/or thin durable wood with dimensions up to 1 meter wide x 1 meter length.
3. The field can either be flat or anomalous/mountainous.

## 11. The Competition

1. The aim is to present a construction related to the theme of the category and as outlined in section «**2. The Theme**».
2. In the construction, it is important for the robot to play a leading and active role in its environment.
3. The robot must perform at least four (4) mobile/kinetic activities or automations.
  - **Mobile/Kinetic activity** is the process of moving the robot (or of another part of the structure) from one point to another as a result of its reaction to an external stimulus from the wider construction environment.
  - **Automation** is the process in which a sensor realizes/understands/captures an external stimulus from the wider construction environment and reacts to that stimulus by updating the robot control program. The robot, in turn, processes the data it receives from the sensor and performs a task. Such a task may, for example, be the movement of the robot, the creation of sound or noise, the appearance of data or calculations or an alert or update or an image on the computer screen etc.
  - It is understood that automation does not involve human intervention of any kind.
4. The robot should remain on the field throughout the activity presentation.
5. If the robot hangs or gets stuck and does not move, it can be helped by children by lifting it or by moving elements on the track.

## **12. The Assessment Process**

1. The programme of the event will specify the date and time on which the presentation of the constructions of each category will take place.
2. The evaluation is carried out by groups of judges who visit the participating teams at the exhibition area of their constructions.
3. Depending on the number of teams participating in the competition and in order to minimize the waiting time, there may be two parallel evaluation teams.
4. In order to minimize the waiting time of the teams, the following assessment process will be followed:
  - The teams will set up their construction at a place indicated by the Organizing Committee.
  - The evaluation teams will perform the assessment of the constructions of the teams.
  - Upon completion of the assessment of all the teams of the category, their results will be announced.
  - Time will then be given to the audience to visit the competition area to have a closer view and admire the constructions of the teams.
  - At the time to be indicated on the programme, the teams of the category will exit the competition area with their constructions.



### **13. Assessment Criteria**

1. The maximum number of points to be achieved by a team is one hundred (100).
2. The evaluation criteria are explained below.

#### **13.1 Presentation (Maximum Points: 40)**

1. The team will have available three (3) minutes to present the structure and the activities performed by the robot to the judges.
2. The presentation gives forty (40) points and includes the following criteria (10 points per criterion):
  - Presentation evaluation and communication skills,
  - The degree of involvement of all team members in the presentation, their collaboration and complementarity during the process,
  - Ability to explain and understand the construction as a whole and its usefulness; the role and mode of operation of the robot and the other components of the construction,
  - Satisfactory response to referee questions from all team members.

#### **13.2 The Robots (Maximum Points: 30)**

1. This part of the evaluation gives thirty (30) points and includes the following criteria (10 points per criterion).
  - An explanation of the code used to program the robot,
  - Demonstration and explanation of at least three (3) robot functions or automations performed by the robot,
  - Detailed level of robot design, variety of sensors utilization and optimization of its operation.

#### **13.3 Conception of Idea and Implementation (Maximum Points: 20)**

1. This part of the evaluation gives twenty (20) points and includes the following criteria (5 points per criterion):
  - Relevance and interconnection of the construction with the theme of the competition in order to effectively and qualitatively solve a problem,
  - Level of research performed on the theme, applicability of the solution to the real world,
  - Creativity and originality of the team and authenticity of the construction,
  - Proper use of materials and overall quality of the construction.

### **13.4 Explanatory Video (Maximum Points: 10)**

1. Each team must explain its construction and the idea behind it with a video.
2. The maximum duration of the video must be up to three (3) minutes.
3. The video must document collaboration, team and collective work amongst team members implementing the construction and programming the robot.
4. The video should show present the robot's motor activities and the automations.
5. The team must upload its video on the web so that it can be accessed by the Evaluation Committees for review and evaluation purposes prior to the competition date.
6. The team must notify the Organizing Committee about the link that leads to its video by completing the [video registration form at this link](#).
7. Registration of the video must be made **at the latest by Saturday 17<sup>th</sup> June 2023 (no extension will be given)**. Any registration after the above date will be disregarded and the team will receive zero (0) points for the Explanatory Video.
8. The video must also be available on the day of the competition for demonstration before the judges, if so requested.

### **14. Example Videos**

1. See a [video](#) for the ENGINO MINI platform from a previous event.
2. See a [video](#) for the LEGO WeDO platform from a previous event.
3. On the Tube channel of Robotex Cyprus you may see more videos.

### **15. Responsibility**

1. The organizers of ROBOTEX CYPRUS do not take responsibility for any incidents and/or accidents that may be caused by the participants or their robots or any of their equipment.
2. The organizers of ROBOTEX CYPRUS do not accept any responsibility for any damage to the robots or the construction or the theft of them, should it occur.

## **16. Terms and Conditions of Participation**

1. Participation in ROBOTEX CYPRUS assumes and requires acceptance of all terms and conditions for participation by competitors, the coaches and organizations they represent.
2. In case of any difference in the competition rules between the English and the Greek versions, the English version is considered as correct.
3. The robot must be registered before the competition. The registration process includes technical inspection of the robot, marking the robot with a number sticker.
4. All questions and issues that may arise during the competitions must be reported to the judges.
5. The final decision about objections is taken by the judges in cooperation with the organizers.
6. Judges' decisions on any objections are considered final and can't be challenged by participants, the coaches or the organizations they represent.
7. In the case of a deliberate alteration or change of marking of the unique number of robots, the coach and his team will be automatically expelled from the event. As a result they will not be able to take part in any other challenge they may have enrolled. The coach and his team will leave the venue immediately. The coach also loses the right to take part in the next ROBOTEX CYPRUS event and is automatically excluded from participating in ROBOTEX INTERNATIONAL in case one of his/her teams has won a ROBOTEX CYPRUS competition. The Organizing Committee reserves the right to publicly announce the coach, the team and its members.
8. It is expected that both the coaches and the members of the teams will exhibit a spirit of noble rivalry and will behave with mutual respect, decency and esteem both to themselves and to the organizers, judges and volunteers. The behaviour of all coaches and team members should promote "fair play". Therefore, the Organizing Committee reserves the right to expel anyone from the venue of the event who violates the above principles of good practice.

## **17. Technical Control**

1. For purposes of clarity of this section, the clauses «6. The Robotics Platforms», «9. The Robot», «10. The Construction and its Wider Environment» and «11. The Field» will be collectively referred to as the “Team’s Entry”.
2. Technical control includes the inspection of the Team’s Entry.
3. If any of the items of the Team’s Entry above do not comply fully with the requirements, the team will not be accepted to compete and will automatically be disqualified from the event.
4. Technical control of the Team’s Entry will take place as part of the assessment process of the team.
5. It is expected that the team will arrive early as specified on the programme of the event. Failure to do so, the team will not be accepted to participate in the competition.
6. Only the members of the team must be involved in the process of transport of the team’s entry at the competition area.
7. Only the members of the team must be involved in the preparation of the team’s entry and its placement at the exhibition area.

## **18. Changes and Cancellation of Rules**

1. Any changes and/or cancellations in the rules of the competition are decided by the Cyprus Computer Society in consultation with the Organizing Committee of the ROBOTEX. You may address comments and suggestions to the Organizers at **robotex@ccs.org.cy**.

## **19. Note – Team Participation in ROBOTEX INTERNATIONAL**

It is noted that the corresponding competition in ROBOTEX INTERNATIONAL in Estonia is INSPLAY LEGO WEDO (for LEGO WEDO) and INSPLAY ROBO LEAGUE for ENGINO MINI.

The difference between the ROBOTEX CYPRUS competition and the two INSPLAY competitions is the fact that INSPLAY is primarily a construction/project exhibition and does not include a competition element.

Therefore, the ROBOTEX CYPRUS winning teams who will be participating in ROBOTEX INTERNATIONAL must be aware that in ROBOTEX INTERNATIONAL there is no declaration of winners and there are no prizes awarded. The above were valid during last year’s ROBOTEX INTERNATIONAL event. In any case, it is the responsibility of the team members to regularly visit the website of the international event at [www.robotex.international](http://www.robotex.international) for updates.