

A large, light blue graphic in the background depicts a stylized robot head. The top part of the head is formed by two wrenches, and the bottom part is formed by two interlocking gears. The word 'ROBOTICS' is written in a large, outlined, red font across the center of the robot's face.

“Online Challenge 2018”

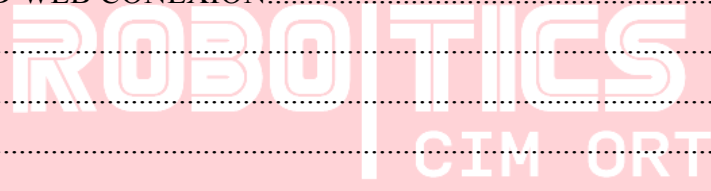
Colegio Israelita de México ORT
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GENERAL DESCRIPTION

The challenge is to design a prosthesis of an arm which reproduces the exact movements of the fingers, could be left or right arm. The mechanisms should be both manual and automatic.

The students will hold the prosthesis around their arms. Once the students hold the prosthesis, they must operate it.

The competitors must log in Hangout on February 19 depending their time zone. It is necessary that one person of the team knows how to build and program Lego.

For reference, go to the link:

https://www.youtube.com/watch?v=7JsDiZxz_fQ

SPECIFICATIONS

- A. This competition is only for students from elementary and middle school (age 6-16).
- B. On the day of the presentation, the students will have 3 hours to demonstrate the work of their project and the prosthesis must play the selected melody on a piano or keyboard.
- C. The students will be able to make teams of 5 and 1 adviser.
- D. The teams will receive via email a link to login Webex in order to be able to communicate with the committee.
- E. The students will be able to complete the assigned project before the challenge.
- F. It is permitted that the adviser helps his team every 50 minutes for only 10 minutes only 3 times, once the competition has begun.
- G. The adviser must stay close and near to the camera.
- H. The adviser will be able to support his team during the challenge when the judges allow it. They will not be able to operate or program the prototype, the assistance will only be verbally. The judges will announce the advisers when to assist their teams.
- I. All the participants, including the judges, the committee and the advisers, will be able to make questions between them for general doubts and further information regarding the challenge.
- J. In the conversation through WebEx, the microphone must be active all the time during the challenge.
- K. The schedule of the competition is the following:

Region	Time
Europe	6:00 hrs, Mexico City (GMT-6) , February 19, 2017
Latin America	11:00 hrs, Mexico City (GMT-6), February 19, 2017

TYPES OF ROBOTS

1. Manual Operation

The participant will be able to press the buttons according to each finger of the prosthesis. This prosthesis must replicate the movements of a human arm.

2. Automatic Operation

The participant will be able to press one button only because it needs to be previously programmed. The prosthesis will complete the challenge automatically.

SPECIFICATIONS OF THE ROBOT

The prototype for the challenge must be built with Lego® parts only. There is no limit of the maximum number of Lego parts but instead, it is necessary to count with a minimum number of pieces. These basic pieces are:

- 2 Brains
- 5 moto-reducers
- 1 computers with Lego software
- 1 table
- 1 piano, keyboard or organ
- 1 programming cable
- Conexion cables (motors, sensors etc.).
- Assembly pieces
- 1 object that weighs a minimum of 500g

MEASURES OF THE PROSTHESIS

There is not a restriction in the measures of the parts of the prosthesis. Therefore, there is no limit in value of the height, width and length but it's important that the students use Lego parts all the time.

ACTIVITIES AND EVALUATION DURING THE 3-HOUR CHALLENGE

At the beginning of the challenge, the committee will give to the participants a piece of music that the robot will need to perform in the piano or keyboard after the 3 hours of work.

The evaluation criteria is the following:

- 20% - The prosthesis must function automatically and manually.
 - 10% - The prosthesis must function automatically.
 - 10% - The prosthesis must function manually.
- 40% - The prosthesis is able to play a small piece of piano or keyboard automatically. The competitor will be able to hold one part of the arm.
- 30% - The prosthesis is able to play a small piece of piano and keyboard manually.
- 15% - The prosthesis needs to hold automatically an object of a minimum weight of 500g, the participant should move it. The prosthesis needs to hold the object from a point A to point B considering 50 cm as the minimum distance. When the prosthesis holds the object, the hand needs to be turned towards the floor or turned down.
- 15% Innovation and functionality of the robot.
- 20% - The prosthesis will be able to move an object that weight a minimum of 500g, the movement needs to be manually. The prosthesis needs to move the object from point A to B, considering the minimum distance as the following:
1m=100cm.

GOOD LUCK !!



REGISTRY AND WEB CONEXION

Send an email to robotica@cimort.edu.mx with the following information:

1. Name of the adviser.
2. Adviser's email to login Hangouts or webex (gmail preferably).
3. Name, last name and age of the participants.

EVALUATION

1. There will be a different criteria depending on the type of competition held.
2. It is necessary to finish the prototype in 3 hours.
3. The adviser will receive by email the specifications of the robot and evaluation.
4. The jury will be able to ask questions during the competition to make sure that the work is done correctly.

PENALTIES

The following conditions cause penalizations to the team:

1. Cause any damage or disorder in the work area.
2. Insult or make any aggression to the members of the organization or the rest of the competitors.
3. Interact with the adviser without permission of the jury.
4. Logging out the conversation during the call.
5. Depending on the gravity of the penalization , the jury and the committee will be able to disqualify the team.
6. The following conditions will have a penalization:
 - Use other parts rather than Lego® parts.
 - Use pre - assembled prototypes or codes.
 - Interaction with the adviser without permission of the jury.
 - Also, if the adviser doesn't give the tools within the established term.

THE JURY

The juries will have the maximum authority during the challenge. Their decisions will be unappealable.

The juries will be chosen by the organisers according to their career and professional experience.

The juries will also be able to ask questions to the participants through the Hangout application.