

# Engineering Robotics

Classes: 9-12  
No of students per team: 2  
No of teams allowed per school: 1  
Mode: Offline (Thursday, 9 May 2024)

- The first 16 teams to register will be allowed to participate.
- Teams have to Design a wired/wireless manually controlled robot which should be able to travel on sand, marbles, water, etc. The robot that traverses all the hurdles and completes the track in minimum amount of time will be declared as the winner.

Bot specifications:

- The dimensions of the bot should be less than or equal to 300mm X 300mm X 300mm (lxbxh) ,the team which will be failing, will be disqualified from the competition (this excludes the dimension of the gripper but includes tires). The bot can, however, extend its dimension once the run starts. An error of ( $\pm 5\%$ ) is permitted.
- The bot must be controlled manually.
- Maximum weight should not be more than 5Kgs including battery, however a tolerance of 5% is acceptable in weight.
- Teams can use both wired as well as wireless control mechanisms. In the case of wired bots, the length of the wire should be a minimum of 2 meters so that the wire remains slack at any instant of time. If the participants use a wireless mechanism they have to use a dual-frequency remote, Bluetooth, or Wi-Fi.
- The dimensions of the remote are not included in the size constraint of the bot.
- Participants are not supposed to use any readymade Lego components or readymade gripping mechanism. However, the participants are allowed to use ready-made gear assemblies.

# FutureBots

- The body of the vehicle must be covered, to avoid any entanglement between two competing robots.

## Power Supply:

- The participants should use an onboard electric or non-electric power supply i.e. the power source should be on the bot itself. The power source must be non-polluting and must satisfy the safety constraints determined by the organizers.
- In the case of an electric power supply, the voltage between any two points should be less than or equal to 24V DC at all times during the run.
- AC power supply will not be provided and cannot be used in the competition

## Arena:

- The robot has to traverse through a rough terrain of width 1.2m which is surrounded by a barrier of height 10 cm. The arena has different types of regions or checkpoints
- The robot has to move across a series of speed breakers.
- The robot has to move through a pit.
- A small portion of the track is filled with sand (with depth 2cm) on which the robot has to traverse.
- The track is elevated with an inclination of 30 degrees in this part.
- In this region, the robot has to travel through a damp area, filled with water with a depth of 3cm.
- Predefined Obstacles for the competition will include Switch Bridge, speed breakers, marble pit, slippery path, rotating ring disc, curve ramp down, seesaw, etc.