**About Hovercraft challenge :**

Space exploration often requires a probe to be operated remotely over the surface. The probe, which in most cases is referred to as a rover, passes through hurdles that mere humans cannot withstand. One can’t help but be fascinated by the amount of work that needs to be put in to make rovers that are that endurant and versatile. The Hovercraft Challenge is designed as an interdisciplinary technical competition. Participants will design and construct small-scale hovercraft capable of navigating a custom-built obstacle track.

*Helpful References:*

1. [**https://howtomechatronics.com/projects/diy-arduino-based-rc-hovercraft/**](https://howtomechatronics.com/projects/diy-arduino-based-rc-hovercraft/)
2. [**https://www.instructables.com/How-to-make-a-RC-Hovercraft/**](https://www.instructables.com/How-to-make-a-RC-Hovercraft/)
3. [**https://www.jpl.nasa.gov/edu/resources/project/make-a-hovercraft/**](https://www.jpl.nasa.gov/edu/resources/project/make-a-hovercraft/)

**Registration Rules:**

1. **Eligibility and Registration :**   
    1.1 This is a **team-based competition**. Teams may consist of participants both from IIIT Hyderabad and from external institutions.  
    1.2 **No registration fee** shall be levied for participation in the event.
2. **Team Composition**  
    2.1 Each team shall comprise **not more than five (5) members**.  
    2.2 Team members **need not be enrolled at the same educational institution**. Cross-institutional teams are permitted.
3. **Project Requirements**  
    3.1 Each team is required to **design and construct a manually controlled, wireless hovercraft**.  
    3.2 The hovercraft must demonstrate the capability to traverse a track containing **obstacles, potholes, and varied terrain**.  
    3.3 The objective is to accumulate the **maximum points** by successfully navigating the course as per the scoring system prescribed by the organizers.
4. **Costs and Responsibilities**  
    4.1 Teams are responsible for **bringing a fully functional hovercraft** to the event.  
    4.2 The **organizing club shall not reimburse any costs or expenses** incurred in the design, development, or transportation of the hovercraft.  
    4.3 The sole incentive for participation shall be the **prizes awarded to winning teams**.
5. **Originality and Disqualification**  
    5.1 The hovercraft must be **constructed entirely by the participating team from scratch**.  
    5.2 The use of a **commercially purchased hovercraft or pre-assembled kit** shall result in **immediate disqualification**.
6. **Binding Nature**  
    6.1 Registration in the event constitutes the team’s acceptance of and agreement to abide by the foregoing rules.  
    6.2 The organizers reserve the right to interpret, amend, or supplement these rules at their discretion, and all participants shall be bound by such decisions.

**Round Tasks:**

•⁠ The robot has to be placed in the starting zone before the start of the event.

•⁠ ⁠**No team members can touch the hovercraft without permission from the judges once the run has started.** Eg : If

•⁠ ⁠The whole track will have various checkpoints at regular intervals. The teams will be awarded marks according to the number of checkpoints cleared.

**Judging Parameters:**

• ⁠Every team will be awarded with 50 points while clearing each checkpoint.

•⁠ ⁠Time bonus will be awarded (in case the bot completes the task). Time Bonus= 600 - (no. of seconds in which bot completes its run through the whole arena).

•⁠ ⁠Every team will get 800 points when the hovercraft finishes the run.

**Penalties:**

□ Every collision with the wall of the arena attracts a penalty of 40 points, and every collision with the obstacles attracts a penalty of 70 points.

□ The participant must not touch the bot during the run without taking a timeout. Doing so will result in a penalty of 10 points.

□ If the hovercraft touches the track lines 5 points will be deducted for each intersection.

□ If the hovercraft is half way out of the tracks, 10 points will be deducted each time. If the participants wish to skip an obstacle and continue just after the obstacle, a specific amount of points will be deducted depending on the difficulty of the obstacle.

**Bot Specifications:**

1.⁠ ⁠length x breadth = 40 cm x 30 cm maximum allowable limit.

2.⁠ ⁠Brushless motors with rating no more than 2500kv can be used. Participants should have the Motor model with them to prove the kv value when asked to do so.

3.⁠ ⁠ESC current ratings not to exceed 30 A. Power supply (battery) above 12 volts cannot be used.

4.⁠ ⁠Minimum cushion height: 2 cm at full thrust. Maximum propeller diameter that can be used: 8 inch