

## HOVER ONE

---

### EVENT DESCRIPTION :

To design a hovercraft or ACV (air cushion vehicle) that will be tested for speed, manoeuvrability and handling on various terrains like sand, water and gravel. It requires the participant to build a radio controlled hovercraft that could complete the specified track in the least possible time.

### FORMAT :

#### Round 1: Testing

- This round requires the participants to drive their hovercraft on the given track.,mentioned under track layout.
- The width of the track will be around 1.5m.
- The teams will be given **ONE** attempt.

#### Round 2: Maneuverability

- This round requires the participants to maneuver their hovercrafts through the given track.
- The teams will be given a maximum of **TWO** attempts.
- This round is the final round.

### RULES :

- The maximum dimensions of the model allowed are 60cm x 50cm x 50cm (lxbxh).
- There is no limitation on the weight of the craft.
- The use of IC Engines is strictly prohibited. **ONLY** DC motors are allowed.
- Use of ready-made actuators/motors, remote control units, electronic speed controllers and propellers is allowed
- Teams should bring their own remote controls, and they must operate at 2.4 GHz. Radios with any other frequency are strictly prohibited for use during the event.
- Ready to use kits and readymade building kits are strictly prohibited.
- There is no limitation on the type or number of motors or servos that can be used.

# WWW.PRAGYAN.ORG

LET'S CELEBRATE TECHNOLOGY

- Participating teams will have to send a photo of their hovercraft and the transmitter by Sunday, 22nd February, 2015, 11:59PM.
- Crafts found damaging the arena will be immediately disqualified.
- The minimum number of members allowed per team is 2, and a maximum of 6 members will be allowed. Only 2 members from the team are allowed to be near the track.
- Only one member of the team is allowed to run the hovercraft during a trial.
- Event manager's decision will be final in case of any conflicts.
- Other communication devices are not allowed near the arena while the competition is on. This includes remote control of your hovercraft while some other team's run is on. The organizers hold the right to check for these devices and their usage.
- The time measured by the organizers will be final and will be used for scoring the teams. Time measured by any contestant by any other means is not acceptable for scoring. In general, the decision of the organizers will be final and binding in all circumstances.
- There will be a certain number of check points on the track, which will be informed to the participants before the start of the run. If a machine falls from a height off the track or gets stuck, then it will be placed back on the last check point the hovercraft has passed. This will be done by the organizers.
- Teams are not allowed to touch the hovercraft during the run (except if the team announces time-out as per the next rule). The timer will also keep running during this process.
- Time Outs: A team is also allowed time outs of 90 seconds max, in case they feel that manual intervention is required to repair any damage or malfunctioning. A maximum of 3 timeouts can be taken. The timer will be stopped for the duration of the time out. However, the intervention has to be for a genuine reason. After the time-out, the hovercraft will be placed at the last checkpoint.
- Teams should bring spare parts (Batteries, Propellers, and Motors etc.) to the event along with the necessary tools for immediate repairs. The organisers will not provide/sell any such equipment.

## JUDGING CRITERIA :

### Round 1:

- Teams have to aim for the best lap times. The lap time will be calculated as follows:
- Lap time is the **ACTUAL** time taken to complete the track.

### Round 2:

- There will be in all 3 checkpoints.
- Crossing each check point awards the participants a set number of points. The total points are cumulative, that is if a contestant crosses only up to 2nd checkpoint the total number of points he/she earns is 150 points.
- In the case of a tie in points, the least time in which the points have been secured will be considered.

## **PROBLEM STATEMENT :**

To design a hovercraft or ACV (air cushion vehicle) that will be tested for speed, maneuverability and handling on various terrains like sand, water and gravel. It requires the participant to build a radio controlled hovercraft that could complete the specified track in the least possible time.

## **FAQ :**

### **1. Who can participate?**

Students from any college or university can participate in this competition.

If you have never made a hovercraft before, and seek guidance, please check the downloadables under resources tab. You may also contact us at:

Email: [hoverone@pragyan.org](mailto:hoverone@pragyan.org)

Technical information will be put up in a separate module.

### **2. How many members are allowed on a team?**

A team can have a 2 to 6 members. Members need not be from the same college.

### **3. I have graduated from college and am not currently a student. Can I participate in the competition?**

No. You can participate only if you are currently a student,

### **4. Is pre-registration necessary?**

Yes, all participants must register on the website. You will require your Pragyan ID's to register for the event.

### **5. Can I participate without submitting the photos?**

No, all participants registering online will have to submit the photos by Sunday, 22nd February, 2015, 11:59PM.

### **6. Will any charging facility be given at the venue?**

Charging points will be provided via spike-busters aka surge protectors. LiPo chargers MUST be brought by the participants for the event.



**7. Do I need the photo of a working prototype to participate in Round 1 of the event?**

Need not necessarily be a working model, but it should show the development in building of the structure. Also, the basic structure of the hovercraft will be noted.

**8. Should the model for the first and second round be the same?**

Yes.

**9. Will Participation certificates be provided?**

Certificates will be given to all participants who finish traversing round 1 within the stipulated time.

**10. Are spot-registrations allowed?**

Yes. But please note that it will be on a first-come first-serve basis. There is no guarantee that slots will be available. Please select this option at your own risk.

**11. Can we use DIY (Design-it-yourself) kits?**

No you can't. Only Propellers, Brushless DC motors, servos, Electronic Speed Controllers, Lithium-Polymer batteries, 2.4 GHz transmitters and receivers will be allowed as off-the-shelf electronics for the event.

**12. Any restrictions on weight of the craft?**

No restrictions on the weight. However, dimensions mentioned in the rules must be strictly adhered to.

**13. How many people can control the hovercraft?**

In a given attempt, only one person can pilot the craft.

## RESOURCES :

Facebook Page: <https://www.facebook.com/3d.amc.nitt>

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Fabrication%20Manual\\_Single%20Motor%20Hovercraft.pdf](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Fabrication%20Manual_Single%20Motor%20Hovercraft.pdf)

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Fabrication%20Manual\\_Two%20Motor%20Hovercraft.pdf](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Fabrication%20Manual_Two%20Motor%20Hovercraft.pdf)

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Hover%20One%20Pragyan'15.pdf](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Hover%20One%20Pragyan'15.pdf)

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Links%20to%20tutorial%20videos.docx](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Links%20to%20tutorial%20videos.docx)

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Theory%20of%20Hovercraft.pdf](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Theory%20of%20Hovercraft.pdf)

[http://www.pragyan.org/15/home/events/core\\_engineering/hover\\_one/resources/Webste%20Links%20for%20buying%20the%20components.pdf](http://www.pragyan.org/15/home/events/core_engineering/hover_one/resources/Webste%20Links%20for%20buying%20the%20components.pdf)

**PRIZE MONEY : Worth INR 35,000**

**CONTACTS :** Dipto: +919597398616

N.D. Deepak: +919962264080

[hoverone@pragyan.org](mailto:hoverone@pragyan.org)