



*Faculty of Engineering and the Built Environment
Design and build a hovercraft powered by air pressure from a balloon.
Competition Day – 4 August 2017*

1. Assignment

Design and build a hovercraft which moves on land. The hovercraft can be any shape. The hovercraft will be powered by air blown from a balloon. A standard sized balloon will be supplied by TUT on the day of the competition. You can use your own balloons when you are testing your hovercraft.

2. Material

Any material can be used to construct the hovercraft. The hovercraft must fit into the A4 copy paper carton (box). The evaluator will place the hovercraft inside the box to see if it fits. If it does not fit, the model will be disqualified. The hovercraft must be safe and the evaluator's decision (as to whether the hovercraft is safe or not) will be final. An unsafe hovercraft is one which can harm any person or cause damage to any surrounding structure.

3. Objectives

There are two objectives:

1. To determine the shortest time the hovercraft will take to cover a distance of 1 meter.
2. To measure the longest distance the hovercraft can travel once it has been set in motion.

4. Learning objectives

The student must:

Use simple physics to calculate the values necessary to design and build the hovercraft.

Understand the necessity to build a stable hovercraft.

Learn that the shape of the hovercraft will determine how the hovercraft performs.

Learn that the pressure energy stored in the balloon can be converted to kinetic energy.

5. Procedure

- The hovercraft must be built and tested at school or at home.
- The competition will be conducted on a TARTAN athletic track.
- The competitor(s) must make sure that the hovercraft stays on the track while it is being evaluated.

6. Time

Each team will have two minutes after announcement to start the hovercraft.



7. Teams

Each school can have only one team competing in this (Mechanical Engineering) competition.

Each team must consist of a maximum of two learners. Any team with more than two learners will be disqualified.

8. Evaluation

- The design and construction of the hovercraft will be evaluated. The hovercraft must be built by the learners themselves. Ingenuity and innovation will be rewarded.
- Functionality of the hovercraft will be part of the evaluation (0 or 1).
- The shortest time to complete 2 minutes. The better of two attempts.
- The hovercraft that travels the longest distance. The better of two attempts.
- Verification of size.

Final Score = [(Distance x 40%) + (Time x 40%) + (Design x 20%)] x Functionality

9. Disqualification

- If a hovercraft does not meet the size requirements, it will be disqualified.
- If a hovercraft does not meet the safety requirements, it will be disqualified.
- Only fully functional hovercrafts will be evaluated. No repairs and re-working will be allowed once the competition has started. **YOU MUST BE PREPARED WHEN THE COMPETITION STARTS!!!**
- No learners will be allowed on the Tartan track.
- The decision of the judges is final.

Please Note: Ideas for building a lightweight hovercraft can be obtained from the internet. It is entirely up to each team how they adapt the ideas, as long as the adaptation conforms to the rules as stated above.

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