

AN AMALTHEA '25 EVENT

QUAKECRAFT

OFFICIAL RULEBOOK

VENUE: Multipurpose Hall

DATE: 8th November

TIME: 10 AM onwards

FEEL FREE TO CONTACT: Dhruvil (94084 65353)



INTRODUCTION

QuakeCraft is a thrilling structural design challenge that puts participants' creativity, precision, and engineering intuition to the test. Participants will design and build straw towers capable of withstanding simulated seismic activity. The event aims to blend practical model-making with fundamental concepts of stability and dynamics under vibration.

Problem Statement:

Participants are required to design and construct a straw tower that adheres to specific dimensional constraints and demonstrates maximum resilience when subjected to shaking.

The goal of this challenge is to develop problem-solving, structural analysis, and teamwork skills, while encouraging innovation in creating lightweight yet strong designs.

ELIGIBILITY & TEAM FORMATION

- Eligibility: Open to all students.
- Team Size: 2-4 members per team.



SUBMISSION GUIDELINES

The final straw tower model must adhere to the following constraints:

- Height: Between 650 mm and 700 mm
- Base dimensions: Between 90 mm and 120 mm
- Straws and cardboard sheets will be provided by us. Participants may bring cutting tools, adhesive materials (tape/glue), and measuring instruments of their own.
- Cardboard given must be only used to make the floors of the buildings. They must be well attached/stuck to the straws because the weights will be kept on it to judge. A cardboard of a larger area also must be used for the base of the build to further attach it to the machine.
- The structure should be free-standing (not supported externally).
- Participants are expected to complete and bring their structures ready for testing on the event day.
- Tables and display space will be provided at the venue.
- Any violation of constraints may result in disqualification during judging



JUDGING CRITERIA

The performance of each tower will be tested as follows:

Phase 1 – Without Load

- The tower will be placed on the shake table and subjected to vibrations at a preset frequency for 30 seconds.
- If the structure remains stable and upright, the frequency will be increased, and the process will be repeated (typically at two frequencies).

Phase 2 – With load

- Once both frequency tests are cleared, weights will be placed on the tower progressively in the following sequence:
50 g -> 200 g -> 250 g -> 500 g -> 700 g ...
- After each added load, the tower will again be subjected to seismic vibrations for 30 seconds.
- The sequence continues until the structure collapses or can no longer maintain its form.



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