



BRIDGE DESIGNING

PROBLEM STATEMENT

Design a truss bridge using Popsicle sticks (ice cream sticks) satisfying the stated Constraints.

Event Structure

- Round 1: Teams should construct the model during the event in the stated time period.
- Round 2: The participants can test their structure to check for the strength of the model.
- Round 3: The last chance to modify the model and finalize the structure.

Materials

- Use only the popsicle sticks provided by the club.
- Sticks can be altered physically by cutting or notching at any angle.
- Only Fevicol can be used as adhesive, use of other adhesives may lead to disqualifications.
- Use of threads is not allowed.

Bridge Dimensions

- Length = 56-60 cm
- Width = 10-11 cm
- Height = 12-16 cm
- Weight = 500 gms or less

Configuration of Models

- Clear distance: An 8cm high by 4cm wide clearance must be provided along the entire length of the bridge.

Testing the bridge

- The load will be applied through a hook at the different positions of the bridge.
- The bridge model will be loaded till failure. The maximum deflection at the point of yielding and the load at that moment will be used to evaluate the Structure.
- A deflection test will also be performed to properly distinguish the winner.





Team Size:

- 3 – 5 students per team.
- Any number of teams can participate in the event from different Pools.

Construction

- Sticks can be stacked together lengthwise to form stronger structural elements or to make long span elements.
- The overlapping between two sticks should be more than 40%.
- Maximum number of sticks that can stack together is three.

Judging and Scoring

- First the structure will be reviewed to check if it violates any rules mentioned above.
- The scoring of the structure will be based on performance as well as aesthetics.
- The bridge will be scored on how well the material has been used to support the load.
- The efficiency will be calculated as the ratio of ultimate load capacity and the bridge weight.
- The bridge will also be scored on aesthetics. The judges will judge the bridge based on the detail to connections and members, the uniqueness of the design and its overall look.
- The deflection of the bridge at yielding will be noted. If the deflection increases more than 10 mm, then the load at that deflection will be taken as the ultimate load.

Scoring Criteria

- Deflection at yield (d) = 20%
- Efficiency (e) = 50%
- Aesthetics (a) = 30%
- Total Score (S) = d + e + a

Penalties

- Violating any of the conditions mentioned underneath, penalty will be imposed according to the judges and may lead to disqualification:
- Weight exceeds the limit (Penalty of 10% of the total score)
- Dimensional specifications are not met (Penalty of 10% of the total score)





- Use of material, except the ones stated in rules (Penalty of 20% of the total score or can lead to disqualification as decided by the judges)
- In case of any discrepancies, the decision taken by the judges and the council will be the final verdict.

PRIZES

- The prize money will be awarded to winners via NEFT and will be processed within 25 working days after receiving the prize money from our sponsors.
- The winners will have to mail the following information (immediately after the announcement of results) to **techclub@nituk.ac.in** strictly in the following format:
 - Subject
 - Competition Name, Team ID - your position (example- Robowars, PG1003- 3rd Position)
 - Body of mail:
 - Captain Account Holder's Name
 - Account Number
 - Bank name and Branch name.
 - IFSC Code

AN IMPORTANT NOTE:

- Judges can disqualify a team if any of the above criteria is not fulfilled.
- These rules may change at any time, even without explicit notification to teams.
- However, the document uploaded here is to be followed as the latest problem statement for all the rules and design specifications. The teams acknowledge that they have a responsibility to read, understand and abide by the rules and
- Prodyogeeky reserves the right to prevent any team from competing at any time for any reason.
- In case of any queries, participants are encouraged to contact Prodyogeeky'24 Team.
- Prodyogeeky'24 has the rights over the guidelines and can alter them as per the requirements.

