



BridgeQuest Challenge: Official Rule Book

1. Introduction

The BridgeQuest Challenge is a structural engineering competition where participants design and build a bridge using only wooden material. The bridges will be tested for their maximum load capacity with the winner determined by the bridge that supports the heaviest weight before collapsing. The challenge promotes creativity, problem-solving skills, and the application of structural engineering principles.

2. Objectives of the Challenge

- Encourage students to apply structural engineering concepts in the design and construction of a bridge.
 - Foster creativity and innovation in developing efficient, load-bearing structures.
 - Test participants' ability to solve real-world engineering challenges using limited materials.
 - Promote teamwork, planning, and design optimization.
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3. Competition Format

- **Stage 1: Bridge Design**
 - Participants will design a bridge that meets the specified dimensions and material restrictions.
 - Teams must submit design plans (including sketches and dimensions) before the construction phase. Late submission will result in negative marking (5 marks per 10 minutes)
- **Stage 2: Bridge Construction**
 - Using only wooden sticks (depending upon the available variety) and approved adhesives or any other material given at the site.
 - Teams will need to construct their bridge on-site
 - Teams are limited to the materials provided by the management (Teknofest) and must adhere strictly to the design rules.

- **Stage 3: Load Testing**

- Each bridge will be tested by gradually increasing the load until the bridge collapses.
 - The weight at which the bridge fails will determine its maximum load capacity.
 - Bridges will be ranked based on the maximum weight supported relative to their mass.
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4. Eligibility Criteria

- Open to high school and university students.
 - Teams can consist of 2 members.
 - No prior experience in bridge building is necessary, but a basic understanding of structural engineering is encouraged.
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5. Bridge Design and Construction Guidelines

- **Bridge Length:**

The bridge must span a **minimum of 40 cm** and a **maximum of 50 cm** in length.

- **Bridge Width:**

The bridge deck must be **between 8 cm to 10 cm wide** to accommodate a hypothetical load or vehicle.

- **Bridge Height:**

The total height of the bridge (from the deck to the top of any structural component) should not exceed **15 cm**.

The clearance underneath the bridge deck (distance from the bottom of the deck to the lowest point of the structure) should be at least **5 cm** to simulate water flow or traffic passage.

- **Weight Limit:**

The total weight of the bridge should not exceed **500 grams (tentatively)**, depending on the materials allowed (like balsa wood, sticks, etc.).

- **Material Restrictions:**

Bridges should only use **wooden sticks** (or any other material given at the site), **glue**, and **string** for construction (specific materials like balsa wood or wooden dowels may be defined).

- **Load-Bearing Area:**

The bridge should have a designated **central load-bearing zone** (5 cm wide by 5 cm long) where weights will be placed during testing. This zone should be flat and able to withstand the applied load.



6. Submission Guidelines

- **Design Plan Submission:**
 - Participants must submit a detailed design plan that includes:
 - Sketches of the bridge design (front, side, and top views).
 - Dimensions.
 - A brief description of the design principles used in the construction.
- **Bridge Submission:**
 - Bridges must be constructed according to the submitted design.
 - The bridge must be constructed on the site within the allotted time i.e. 1.5 hour.

7. Evaluation Criteria

- **Load Capacity (50%):**
 - The maximum weight supported by the bridge before collapse.
- **Efficiency (20%):**
 - The load-to-mass ratio, evaluating how much weight the bridge can carry relative to its own mass.
- **Design and Aesthetics (10%):**
 - Creativity, innovation, and the overall visual appeal of the bridge design.
- **Construction Quality (10%):**
 - Precision, stability, and neatness in the assembly of the bridge.
- **Adherence to Guidelines (10%):**
 - Compliance with the material and dimension restrictions, as well as adherence to the design submitted.

Note: Any violation of the specified dimensions and weight limits will result in deduction of points.

8. Important Dates

- **Competition Dates:** 12 October 2024 & 13 October 2024

9. Awards and Prizes

1. **Prize Money:** Winner: 30,000
1st Runner Up: 20,000
2nd Runner Up: 10,000
2. **Recognition:** Winners will be featured on the event's website and receive certificates or trophies.



All participants will receive participation certificates, and the top designs will be showcased at the event.

10. Rules and Regulations

- Bridges must be built strictly according to the submitted design plans.
- No external assistance or additional materials beyond those provided is allowed.
- The use of any materials not approved by the organizers will result in disqualification.
- Teams must complete construction within the given time and submit their bridges for testing.
- The decision of the judges will be final.

11. Judging Panel

- The judging panel will consist of:
 - Professionals from engineering industry.
 - Professionals with experience in bridge design and load-bearing structures.

12. Contact Information

For any questions or additional information, please contact us at:

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